**LIFTING TECHNOLOGY**

# OPERATING, MAINTENANCE AND SERVICE MANUAL
# 320 kg to 2,000 kg CHAIN HOISTS

Do not use the chain hoist before all operators have carefully read this manual. Failure to operate the equipment as here described may cause injury or even death.

**Retain this manual for future reference and use.**

Before using the hoist, please fill in the following information (refer to the hoist identification plate).
Such information must be communicated every time that the LITEC maintenance service is called.

| | |
|---|---|
| **Model number** | |
| **Instructions for use** | |
| **Serial number** | |
| **Purchase date** | |
| **Voltage** | |
| **Nominal capacity** | |

If you are in doubt or need any further information, please contact LITEC.

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# 1. INFORMATION

## 1.1 Preliminary information

Thank you for choosing an Exe-Rise chain hoist of LITEC Italia S.p.A.

This manual contains important information to help you properly install, operate and maintain your chain hoist. To carry out these operations, all safety rules specified therein must be followed. Should some passages not be clear, please contact our Technical Office.

The information reported in this document refers to own use, care, and maintenance of the single hoist; that is to say, the “rigging” matter is not included. By “rigging” is defined the lifting and handling of loads using more than one hoist and other mechanical equipment. The ability acquired through specialised experience and study, is essential to make rigging operations safe. For information on rigging, we recommend that reference be made to the specific documentation on the matter.

Before installing and using the hoist, the instructions and advice mentioned in this manual and attached documents must be carefully read and fully observed. Operating and service personnel must have read and understood the operating instructions, in particular the safety instructions, before commencing work. Protective equipment must be made available for operating and service personnel and worn at all times. This is the only way to ensure the correct functioning in time of the hoist, its reliability, and defence against damages to people and things.

**WARNING !**
The information reported in this manual, represent important instructions on safety. Non-compliance to such instructions can endanger the safety of persons and/or cause material damages detrimental to you or to others.

The operator or his representative is responsible for supervising operating personnel and ensuring they are aware of the hazards and safety implications of working with the electric hoist.

You should keep this manual clean, complete and in a legible condition for future references. Furthermore, supplementary to the manual, the statutory regulations governing general accident prevention and environmental protection are to be enforced.

This manual and the other documents contained in the packing are an integral part of the hoist supplied to you, and must be carefully kept, protected against humidity and any other deteriorating agents, for all the lifecycle of the hoist. They must follow the hoist in case of transfer to any other user or new owner.

## 1.2 Replacement policy

The hoist has been checked and performances verified by LITEC Italia S.p.A. before shipping.

If the correctly maintained hoist should present a performance problem due to faulty material or workmanship, after inspection by LITEC Italia Spa, repairing or replacement of the unit will be made free of charge in favour of the original purchaser.

This repairing/replacement policy only applies to installed, under maintenance and operating Hoists, as highlighted in this manual and does not include the parts subject to normal wear and tear, misuse, improper installation, inadequate and incorrect maintenance, the effects of hostile environments and unauthorised repairing/modifications.

The manufacturer and dealers cannot accept responsibility for any damage or lack of functionality due to the following situations:

- Carrying out inappropriate operations for an electric chain hoist
- Product modification without the express authorization of the manufacturer
- Inappropriate operation of the hoist
- Operational errors
- Failure to use the product as stated in the manual.

**LITEC ITALIA SPA DECLINES LIABILITY FOR ANY DAMAGES ARISING FROM A NON-COMPLIANT INSTALLATION AND MAINTENANCE INDICATED IN THIS DOCUMENT.**

It is hereby reminded that if the hoist is used in Italy, the user is compelled to follow the provisions of law provided for lifting equipment with load limit over 200kg. When used in other Countries, the possible presence of this kind of provisions must be verified.

## 1.3 Modes of use

The hoist is an electrically operated lifting mechanism, equipped with a steel chain that acts as a bearing element. The lifting can be carried out by fixing the load on the lower hook (the hoist is fixed in height, see Figure 1) or in the reverse position (see Figure 2).

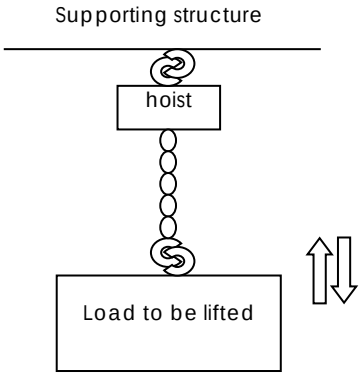



*Figure 1: Lifting of a load with hoist fixed in height (when hoist installation in height is easy and safe)*

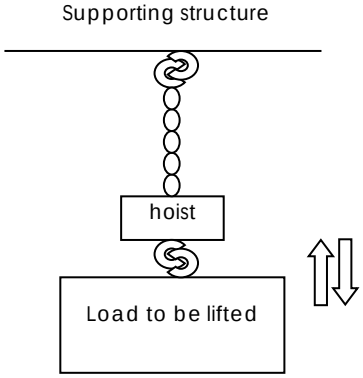



*Figure 2: Lifting of a load with hoist with reverse position (self-lifting), fixed to load to be lifted (when hoist installation in height is difficult and hazardous)*

Electric chain hoists are designed to lift and lower loads vertically and to travel horizontally with trolleys. Every other use is prohibited. Please ask the producer for any special mode of use in advance.

| | |
|---|---|
| | **WARNING !**<br>Using the hoist to carry people is strictly forbidden! |

The EXE-Rise chain hoists are intended for use in setting up events. Events include concerts, shows, conferences, meetings, exhibitions, presentations, demonstrations, film or television shoots and similar.

The location of such events include, amongst other places, theatres, multipurpose halls, studios, film sets, television and radio broadcasting, concert halls, conference centres, schools, exhibitions, fairs, museums, discotheques, vaudeville, recreational parks, sports facilities, open theatres and meetings.

## 1.4 Selection and Provision

"Electric chain hoists are available in many different designs and equipped with various fittings and safety features. It is thus very important to select the correct type. The selection must be based on the hazards arising from the type of use, taking into account the specific conditions of use.

This standard differentiates between three types of electric chain hoists:" *

**D8 Hoist** △
Electric chain hoist according to BGV D8/GUV-V D8 (previously GUV 4.2) "Winches, lifting and pulling devices" for use as a chain hoist for lifting loads in construction.

**D8 Plus Hoist** □
Electric chain hoist based on BGV D8/GUV-V D8 (previously GUV 4.2) "Winches, lifting and pulling devices" for use as a chain hoist for lifting loads in construction with the special characteristic of being able to hold loads statically above personnel, without the use of secondary safety devices.

**C1 Hoist (scenery hoist)** ○
Electric chain hoist according to BGV C1/ GUV-V C1 (previously GUV 6.15) "Staging and production facilities for the entertainment industry" for holding and moving loads above personnel.

The choice of the type of electric chain hoist depends on the operating conditions:

| | D8 | D8 with secondary safety device | D8 Plus | C1 |
|---|---|---|---|---|
| | Where personnel are under the load | | | |
| **Holding loads** | **not permitted** | **permitted** | **permitted** | **permitted** |
| **Erection / dismantling, rigging operations** | **not permitted** | **not permitted** | **not permitted** | **permitted** |
| **Scene movement** | **not permitted** | **not permitted** | **not permitted** | **permitted** |
| **Complex Scene movement** | **not permitted** | **not permitted** | **not permitted** | **permitted** |

*Table 1: Selection criteria for electric chain hoists for moving and holding loads above people*

Where equipment is permanently installed in locations where events take place, electric chain hoists according to BGV C1/GUV-V C1 should be provided, on account of the mode of operation and the anticipated risks.

* Source: igw SQ P2 – Electric chain hoists

## 1.5 Technical data

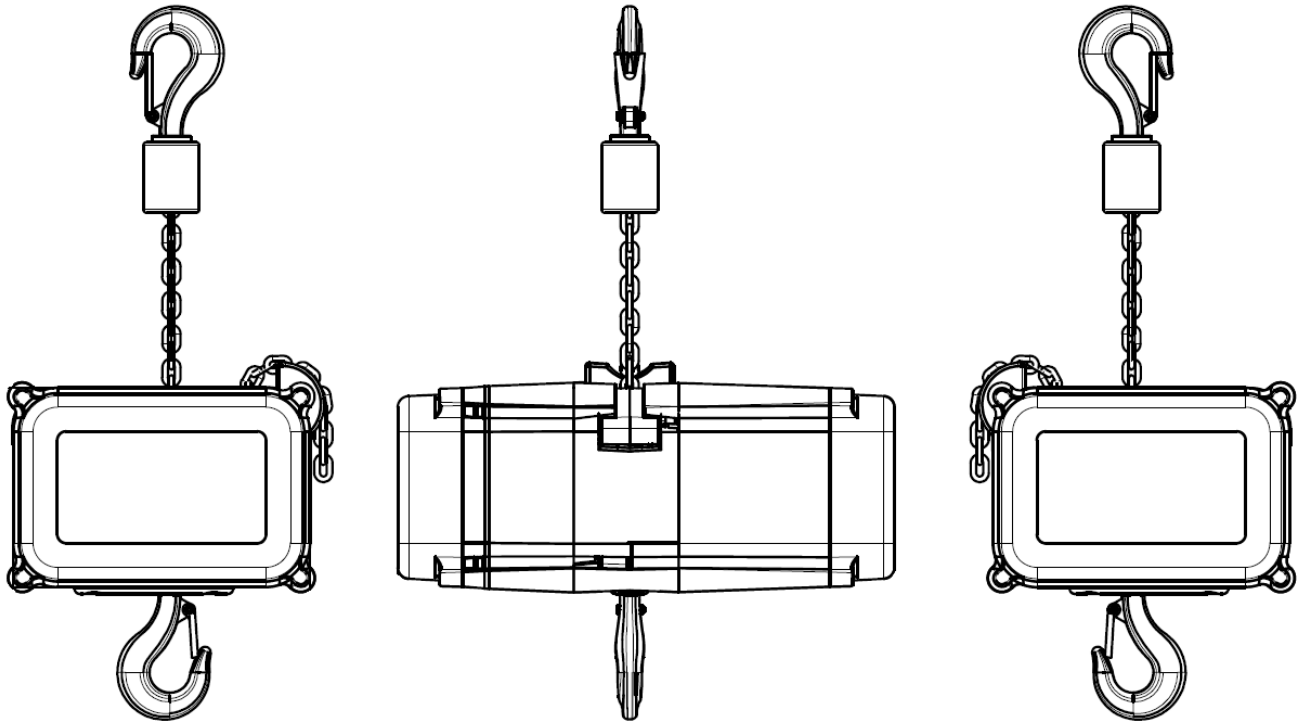


*Figure 3: Views of EXE-Rise hoists*

***Table 2: Comparison chart of the main EXE-Rise chain hoists***

| Model | EXE-Rise 160 kg D8 / D8+ | EXE-Rise 320 kg D8 / D8+ | EXE-Rise 620 kg D8 / D8+ | EXE-Rise 1,120 kg D8 / D8+ | EXE-Rise 2,000 kg D8 / D8+ |
|---|---|---|---|---|---|
| Load capacity | 160 kg | 320 kg | 620 kg | 1,120 kg | 2,000 kg |
| Body dimensions | 134x128x339mm | 134x128x339mm | 275x188x443mm | 275x188x443mm | 275x188x443mm |
| Lifting speed | 4m/min | 4m/min | 4m/min | 4m/min | 4m/min |
| Motor power | 0.5 Kw | 0.5 Kw | 0.8 kW | 1.0 kW | 1.5 kW |
| Body weight | 15 kg | 15 kg | 31 kg | 40 kg | 46 kg |
| Chain weight | 0.35 kg/m | 0.35 kg/m | 0.54 kg/m | 1.03 kg/m | 1.03 kg/m |
| Power supply Voltage (V) | 230/400 V 50Hz 3-pole + Earthing | 230/400 V 50Hz 3-pole + Earthing | 230/400 V 50Hz 3-pole + Earthing | 230/400 V 50Hz 3-pole + Earthing | 230/400 V 50Hz 3-pole + Earthing |
| Noise level | 67.5 db at full load | 67.5 db at full load | 67.5 db at full load | 67.5 db at full load | 67.5 db at full load |

*Table 1: Technical data of chain hoists*

## 1.6 Technical drawings

*Figure 4: Side view of a single-fall EXE-Rise hoist*

*Figure 5: Front view of a single-fall EXE-Rise hoist*

*Figure 6: Side view of a double-fall EXE-Rise hoist*

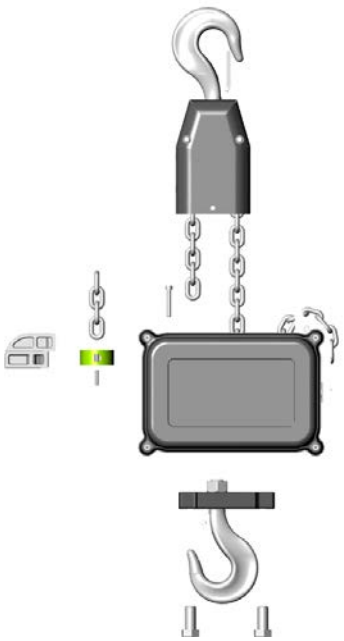


*Figure 7:Front view of a double-fall EXE-Rise hoist*

## 1.7 Exploded views

### 1.7.1 320 kg EXE-Rise chain hoist

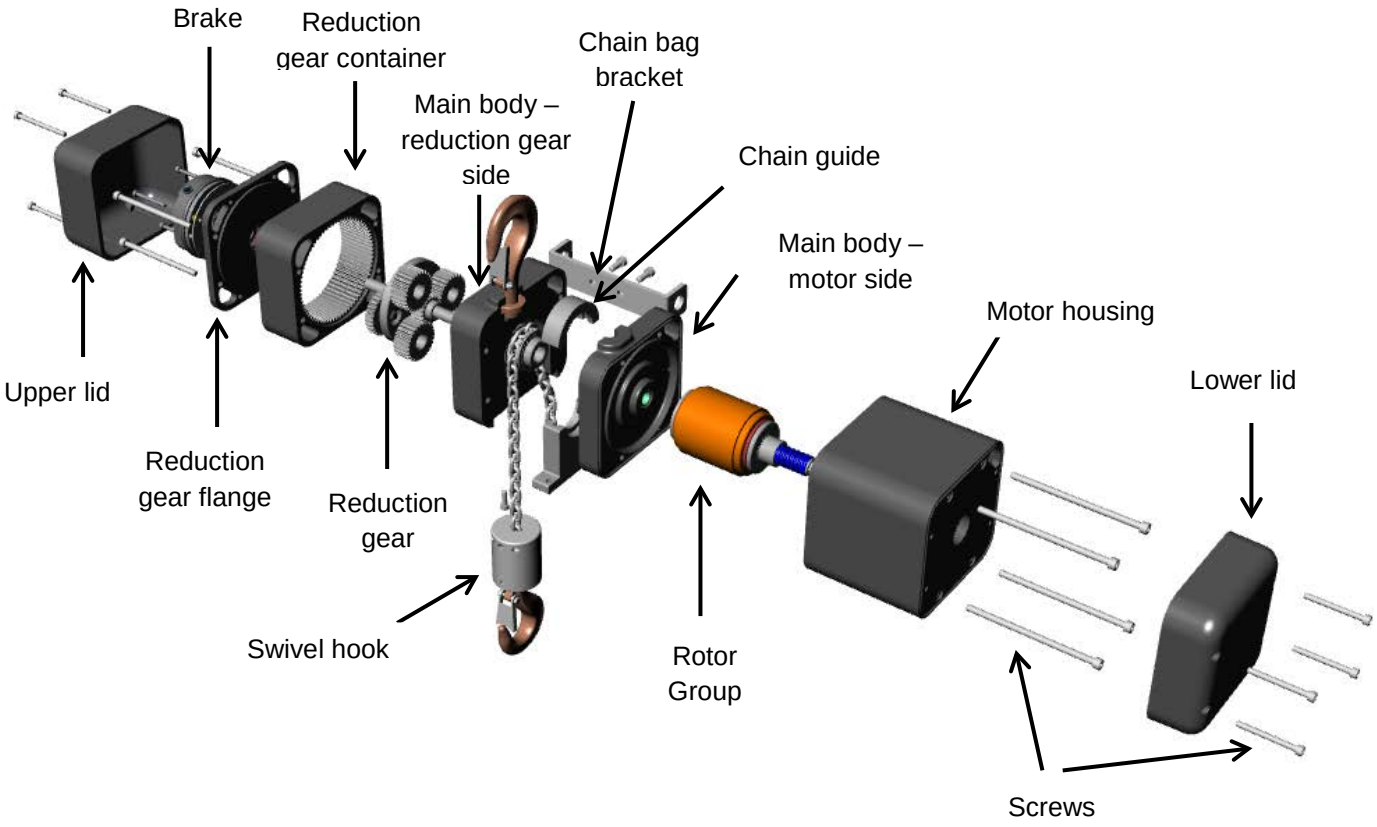



*Figure 8: Exploded view of 320kg hoist*

### 1.7.2 620-2,000 kg EXE-Rise chain hoists

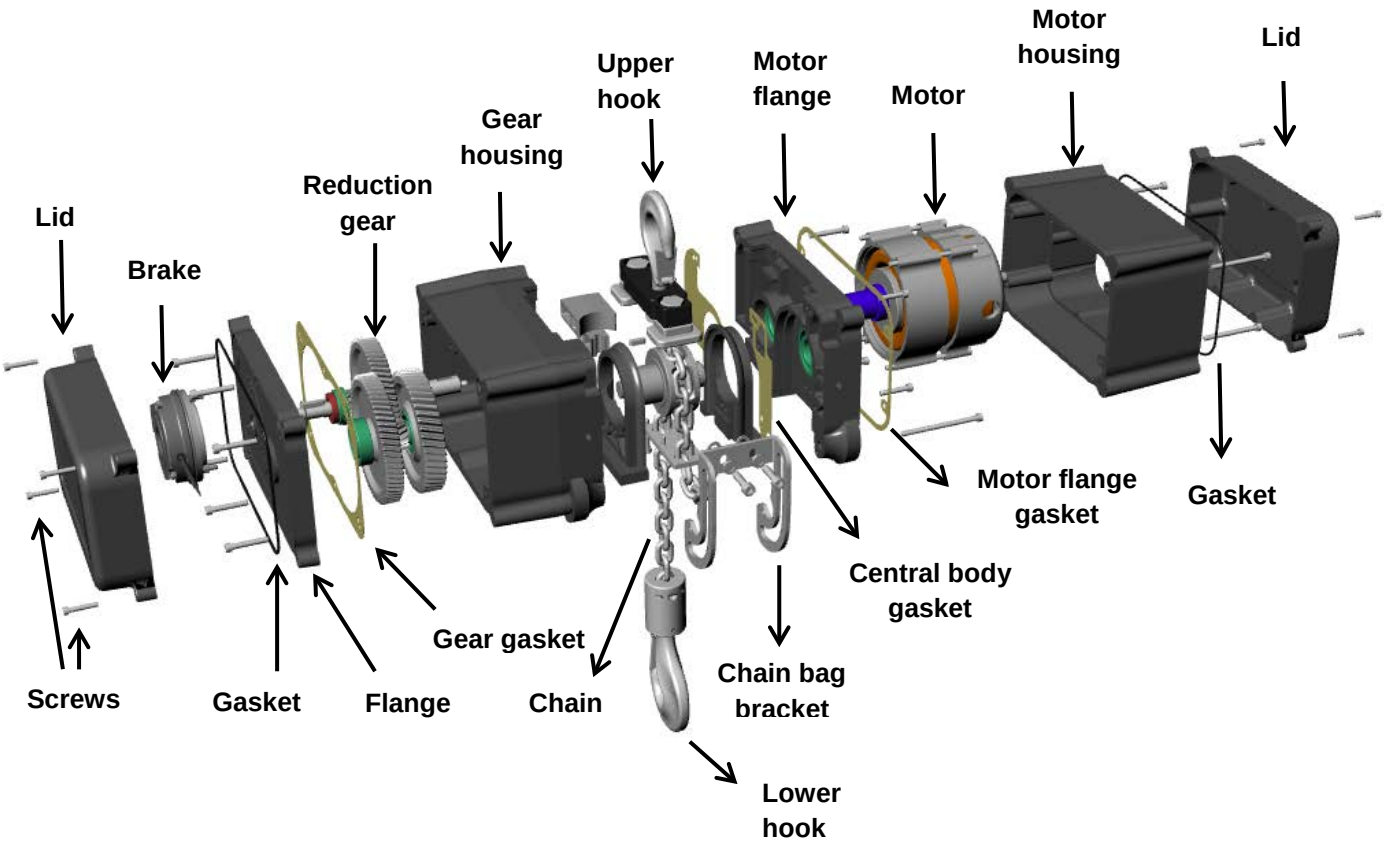



*Figure 9 Exploded view of 620-2,000kg hoists*

## 1.8 Marking

The hoist was designed and manufactured in compliance with the regulations indicated in the related CE conformity declaration.

On the hoist is affixed a plate indicating,
in an indelible manner, the following information

- Model
- Power supply
- Control supply (in LVC chain hoists)
- Mechanism group
- Load bearing capacity
- Identification number
- Year and month of manufacture (YY/MM)
- Indication of hoist typology (either D8 or D8+).

EXE Rise - 1120 kg LVC
Model: EXE Rise - 1120 kg LVC
Power supply: 400VAC 50Hz
Control supply: 24VAC 50Hz
Mechanism Group: FEM class 1Am
Load-bearing capacity: 1120 kg
Identification number:
Year and month of costrunction:
Working speed: 4m/min
Revolution per minute: 1400
Absorption: 1.0 kW
Self-weight: 40.5 kg
D8
WARNING!!! Before removing the cover plate, turn the power supply off. Keep the chain well oiled. Do not lift people up. Do not lift load over people. Do not lift more than 1120 kg.

**WARNING !**
Removing or covering the labels affixed to the hoist is prohibited. Labels must be kept in good conditions and replaced in case of damaging/loss.

# 2 SAFETY PRECAUTIONS

## 2.1 Regulations and standards

EXE-Rise chain hoists are built in accordance with the specifications contained herein, and at the time of manufacture complies with our interpretation of applicable sections of the European FEM or equivalent to American Society of Mechanical Engineers Code B30.116 “Overhead Hoists”, the National Electrical Code (ANSI/NFPA 70) and the Occupational Safety and Health Act (OSHA). Since OSHA states the National Electrical Code applies to all electric hoists, installers are required to provide current overload protection and grounding on the branch circuit section in keeping with the code. Check each installation for compliance with the application, operation and maintenance sections of these articles.

***Table 3: FEM classification – Load spectrum***

| **Load spectrum** | **Average operating time per day in hours** | | | | | | |
|---|---|---|---|---|---|---|---|
| | ≤0.25 | ≤0.5 | ≤1 | ≤2 | ≤4 | ≤8 | ≤16 |
| Light | | | | 1Bm | 1Am | 2m | 3m |
| Moderate | | | 1Bm | 1Am | 2m | 3m | |
| Heavy | | 1Bm | 1Am | 2m | 3m | | |
| Very Heavy | 1Bm | 1Am | 2m | 3m | | | |

***Table 4: FEM classification - Class***

| **Class** | 1Bm | 1Am | 2m | 3m |
|---|---|---|---|---|
| Duty factor of motor | 25% | 30% | 40% | 50% |
| Starts per hour | 150 | 180 | 240 | 300 |

EXE-Rise chain hoists have 1Am classification (2m pending).

## 2.2 Operational parameters

EXE-Rise chain hoists are hoists of differing load capacities. They can be installed as stationary or mobile units. Electric chain hoists are manufactured in accordance with the latest technical developments and recognised safety standards, and are tested for safe operation by the manufacturer.
Electrical chain hoists of the above series may only be used when in an acceptable technical condition, in accordance with their operating parameters, by trained personnel in a safe and responsible manner.

The operational parameters of the electric chain hoist also encompass compliance with the predefined operating, service and maintenance requirements laid down by the manufacturer.

The operational parameters do not include:
- exceeding the defined load capacity
- pulling the load diagonally
- heaving, pulling or dragging the load
- standing under suspended loads (see table 4)
- transporting excessive loads
- pulling on the control cable
- failing to observe the load hook constantly
- running the chain over edges
- failing to observe the load constantly

- allowing the load to fall use to a slack chain
- use at temperatures below -10° C or above +40° C
- use in an explosive environment.

Inching operations, ground mooring and driving against the limit switches should be avoided. The manufacturer accepts no responsibility for damage to equipment and third parties ensuing from such action.

## 2.3 Safe operating instructions and procedures

Assembly, disassembly, and activation of the hoist must be carried out according to the procedures specified in this document. In addition, only the accessories specified by LITEC Italia Spa must be used. In choosing the electric chain hoist to be used, its load limit must always be checked to avoid overload risks. It is a good practice not to force the hoist load limit to the extreme limit. Experience proves that it is an advantage to work at 10 / 15% below the extreme limit. Use individual safety devices.

Protect the hoist and its components against possible welding jets, corrosive substances, mechanical damages, or severe weather conditions. Keep the hoist clean and efficient by carrying out the envisaged maintenance operations. Do not use the hoist in case of defective, anomalous functioning, in doubt of breakage, incorrect movements, anomalous noises.

In addition to the indications mentioned in this document, the user must follow the rules on accident prevention and safety being in force in the Country in which the hoist is used.

Follow these operating instructions:

- Permit only competent personnel to operate the unit.
- When preparing to lift a load, be sure that the attachments to the hook are firmly seated in hook saddle. Avoid off centre loading of any kind, especially loading on the point of hook.
- Before lifting load, check for twists in the load chain. On single reeved chain hoist used in conjunction with head blocks and ground support systems, check for twists between the hoist and head block. Twisted load can result in a jammed liftwheel.
- On double reeved units a twist can occur if the lower hook block has been capsized between the strands of chain. Reverse the capsize to remove twist.
- Do not load hoist beyond the rated capacity shown on hoist identification plate or on the hoist motor housing cover or hoist back frame cover. Overload can cause immediate failure of some load-carrying part or create a defect causing subsequent failure at less than rated capacity. When in doubt, use the next larger capacity EXE-Rise hoist.
- Warn personnel of your intention to lift a load in the area. Tie off the load with auxiliary chains or cables before access to the area beneath the load is permitted.
- Take up a slack load chain carefully and start load easily to avoid shock and jerking of hoist load chain. If there is any evidence of overloading, immediately lower the load and remove the excess load.
- When lifting, raise the load only enough to clear the floor or support and check to be sure that the attachments to the hook and load are firmly seated. Continue lift only after you are assured the load is free of all obstructions.
- Arrange periodic controls to ascertain the status of their efficiency, according to the modes indicated in paragraph 5.3
- STAY ALERT! Watch what you are doing and use common sense. Do not use the hoist when you are tired, distracted or under the influence of drugs, alcohol or medication causing diminished control.

**WARNING !**
Use of the hoist under conditions other than those described in this document, can result in accidents that may cause injuries and/or material damages.

## 2.4 Counter-indications

- Do not use the hoist if it is damaged, malfunctioning, or functioning in an anomalous way.
- Do not use the hoist if the chain is distorted, corroded, damaged, or worn out.
- Do not make modifications nor apply accessories other than those provided by LITEC Italia S.p.A.
- Accessories causing dynamic overstressing or leading to accidental unexpected overloads or limiting the free handling of the load, are not allowed. Therefore, only the lifting accessories that interpose in a passive way between the equipment and the load are allowed.
- Do not try to lengthen the lifting chain or repair it if damaged.
- Do not hit, deform, or crush the hoist chain: danger of cracks or ring breaking may occur.
- Do not weld. Keep the chain away from open fire or flame: danger of structure alteration may occur.
- Do not use the lifting chain as sling and do not wind the chain around the load.
- Do not put tools or foreign bodies in the links of the chain.
- Do not place the load on the point or on the spring closing of the hook.
- Do not operate the hoist beyond the stroke limits of the chain.
- Do not use the lifting chain or the hook as earthing for welding.
- Do not connect the lifting chain or the hook to an energised welding electrode.
- Do not use the hoist if this is not perfectly efficient, even if it can work.
- Do not use the hoist with worn out, open hook or with lack of safety.
- Do not use the hoist to lift, support or transport people.
- Do not lift loads exceeding the maximum load limit of the hoist (in reverse mode, the weight of the hoist must also be taken into consideration).
- Do not allow the load to swing or twist while hoisting.
- Do not handle the load above people or do not leave hanging loads without the operator's control.
- Do not use the hoist outdoors or anyway in places with water jets or environmental conditions other than those indicated in paragraph 2.3.
- The use in explosive, aggressive atmosphere or with high concentration of powders or oily substances suspended in the air is prohibited. Electrical devices produce arcs or sparks that can cause a fire or explosion.
- Do not operate hoist at unusual extreme of ambient temperatures above +40°C or below -10°C.
- In general, use of the hoist with materials, adjustments or modifications not envisaged in this document, is prohibited.
- It is prohibited to tamper with the hoist in order to modify its performances.
- Do not remove or tamper with the protections and safety devices (described in paragraph 2.7).
- Use of the hoist is prohibited to unauthorised operators, who are not trained and qualified in the use or in the knowledge of the risks of the hoist itself.
- Use of the hoist outside the limits indicated in this document is expressly prohibited.

## 2.5 Operators' requirements

**Requirements envisaged for installation, assembly and disassembly of hoist**

The hoist must be assembled and disassembled only by authorised and qualified experts*.
The necessary qualifications for planning, assembly, disassembly, and activation, depend on the risk degree of the locations (that must be previously assessed).

This manual gives the necessary information for a safe installation, use, and maintenance in a generic working environment. Since it is not possible to envisage all the risk conditions of the working environments in which the hoist will be used, the person in charge of the management and supervision of the installation, assembly and disassembly must draft suitable supplementary assembly, disassembly and use procedures based on a risk assessment carried out in the working environment in which the hoist will be used.

**Requirements envisaged for testing the hoist**

The hoist must be tested only by authorised and qualified experts*.
The person in charge of management and supervision is liable to give his approval to the use of electric chain hoists. Such approval can only be given on condition that the occurred carrying out of the tests, as laid down under paragraph 3.7, is duly proved.
Every possible transfer to other users must be documented in writing. (See E DIN 15 750 rules.)

**Requirements envisaged for using the hoist**

The hoist can be tested only and exclusively by authorised and qualified experts*

***) By authorised and qualified expert,** it is intended a person who, by virtue of his/her training and professional experience, has a specific competence in the field of safety and mechanical equipment and is familiar with the related national rules on health protection and safety at work and with the rules of good technical practice (technical regulations issued by the Country in which the hoist is used)

The expert must be able to verify the safety of the safety and mechanical equipment and give the related evaluation. Some examples of "authorised expert":

- Experts on handling and manoeuvres of event set-ups;
- Operators qualified in event set-up technology ("Meister");
- Engineers with a Degree in event set-up technology engineering.

## 2.6 Structural and environmental requirements

**CAUTION !**
Below are indicated the structural and environmental requirements that must be checked by the user for guaranteeing safe use of the hoist.

### 2.6.1 Structural resistance

The operator is responsible for the construction method used for the set-up structure, the related load capacity and the conditions of the connection points (load suspension points) arranged in the place of use. In addition to the risk evaluation and the previously mentioned operating procedures, project documentation (calculation reports, drawings, etc.) related to such aspects, must therefore also be prepared.
The set-up structure and the related elements involved (hoist anchoring point, hoist and related accessories and the load thereof) must be able to bear the imposed loads (during the handling and suspension of the load) with a suitable safety factor.
In the overall analysis, the dynamical forces (for ex. impact factors) that intervene in the reasonably foreseeable use of the hoist must also be considered.

### 2.6.2 Electrical requirements

Check that the electrical system upstream the hoist connection plug (earthing system and automatic cut-out) comply with the Standards in force in the Country of use.
The hoist must be used jointly with the equipment and the accessories in compliance with the regulations in force on the subject of electrical safety (electrical connectors, power cables, signalling cables, power units, control boards, etc.).

### 2.6.3 Environmental conditions

The correct functioning of the electrical equipment is envisaged for the following environmental conditions, which must therefore be observed.

*Table 5: Environmental conditions*

| | |
|---|---|
| Temperature | Temperatures ranging between -10°C and +40°C. |
| Humidity | The relative humidity must not be higher than 50% with maximum temperature of +40°C. A higher relative humidity is allowed at lower temperatures (ex. RH. 90% at 20°C). |
| Altitude | Maximum altitude of 3,000 m |
| Electromagnetic environment | The hoist is designed to work correctly in an industrial type electromagnetic environment, falling within the emission and immunity limits provided by the harmonised rules currently in force. |

### 2.6.4 Lighting

During the set-up and maintenance phases, the lighting of the working place must meet the provisions indicated by Directive EEC 89/654. Nevertheless, it is opportune that the diffusion intensity has not a value lower than 300 lux.
In case of use in environments with poor lighting (typical of the entertainment sector), the localised lighting of the control devices and the intervention area must be arranged.

## 2.7 Hoist safety devices

The hoist is equipped with devices and guards in compliance with the safety standards in force, allowed by the current state-of-art, taking into account the operating conditions and risks for people being in its proximity.

**WARNING !**
The guards and safety devices listed hereunder, must not be removed by the user who, before using the hoist, must make sure of their presence and correct functioning.

Their removal is allowed only for maintenance purposes, after having secured the hoist according to the procedures provided for the maintenance operator.

### 2.7.1 Metal housing

The metal housing carries out various safety functions:

- Prevents the accidental contact with the internal moving parts.
- Prevents the accidental contact with the internal parts that could
- Prevents, through the chain guide, squeezing between the ch **Errore. L'origine riferimento non è stata trovata.**).
- Protects the electrical circuits and safety devices from possible s

*Figure 11 Chain guide, GAISi 9 aluminium, dimensioned to eliminate squeezing risk.*

**WARNING !**
Opening of the metal housing covers is allowed only to maintenance operators authorised by LITEC, after having secured the hoist (see paragraph 5.1).

### 2.7.2 Hooks

The hooks are equipped with a safety closing at the entry (see Figure ) that prevents accidental releases both of the hoist fastener and of the load.

*Figure 12 The two hooks of the hoist are equipped with an automatic entry closing tongue.*

### 2.7.3 Clutch

The clutch is designed to allow the intermediate gear to slide in case of excessive overload. An overload exists when the hoist cannot lift the load.

**WARNING !**
If the clutch is subject to prolonged sliding, it is sensitive to overheating and wear and tear. Under no circumstances the clutch must be subject to sliding for more than a few seconds.

Considering what has been stated above, a hoist with a clutch is not recommended to be used in applications where there is the possibility to add more load to an already suspended load to the point of overloading it.

In addition, if the Hoist is used at unusual extreme environmental temperatures, above 65°C or below -10°C, the changes in the lubricant properties can allow the hoist to lift heavier loads than the normal functioning conditions with the consequent possibility of damage or injuries.

### 2.7.4 Plug

The electrical plug must be used to disconnect the power supply to the hoist, in case of maintenance or emergency.

## 2.8 Residual risks

Residual risks related to a machine are accident risks that remain after the carrying out of all the safety measures taken by the manufacturer (and which, therefore, must be managed by the user).
Residual risks due to the incomplete efficaciousness of the protection measures taken are described in the various paragraphs of this document. The most serious residual risks, to which the safety signs installed on the hoist are associated, are listed hereunder.

*Table 6: Residual risks*

| **Residual risk, dangerous zone and person exposed** | **Behavioural measure to eliminate or minimise the risk** |
|---|---|
| Malfunctioning risks or load fall owing to hoist overload. | Do not exceed the hoist load limit. |
| Various types of risks owing to the wrong installation and use of the hoist. | Read the instructions before installing or using the hoist |
| Fall or shock risks owing to people lifting by means of the hoist. | It is prohibited to lift people by means of the hoist. |
| Risks of load fall or malfunctioning owing to the non-lubrication of the chain | Periodically lubricate the chain. |
| Risks of structural collapses | Check the support structure, the connection between the load hook and the structure, the hook itself, and the connection between the hoist support and the load, so that they are able to bear the stresses according to an adequate safety coefficient. |
| Fall or shock risks owing to breaking, malfunctioning or manoeuvre errors. | The area must be enclosed and watched so that no one can come too near to the load. Before authorising the passage or halt below the load, the load must be secured with a sling and held up with an additional chain or cable. |
| Fall risks (of the installer or serviceman) from the load or structure | The climbing on the load or structures without the use of anti-fall protections (guards and/or sling secured to a suitable anchorage) is prohibited.<br>When possible, carry out maintenances by taking the hoist to the ground. |
| Various types of risks owing to the illegibility of the labels | Do not remove or darken the labels. |
| Various types of risks owing to the lack in periodical maintenance | Check that the annual periodical maintenance has been carried out. |
| Various types of risks owing to the use in environments subject to severe weather conditions | Check the environment conditions before using the hoist. |
| Malfunctioning risks owing to wrong power supply | Make sure that the power supply is correctly in phase and voltage ranges between 230 and 400V. |
| Bag breaking | Before every use, check for possible damages of the chain bag. Make sure that when the chain picker is at full load, the bag must not exceed 75% of its capacity. |
| Various types of risks owing to (electrocution, malfunctioning, etc.) non-sectioning before any maintenance intervention. | Before any maintenance intervention, disconnect the power supply from the hoist. |
| Sudden start owing to the insertion of the plug into a normal socket (that is to say, other than that of the controller or a suitable power unit). | It is prohibited to insert the plug into a socket other than that of the controller or the suitable power control unit. |
| Various types of risks owing to tampering or removal of the safety devices. | It is prohibited to tamper or remove the safety devices |

## 2.9 Secondary safety components

**WARNING !**
In D8 hoists or when maintenance interventions with still suspended load must be carried out, the user must block the load into position with secondary safety components (not supplied).

A secondary safety component is a second, independent equipment element, suited to prevent the fall of the load. These elements must preferably grant a zero tolerance in terms of descent (= 0 cm). To such purpose, only mechanical metal connections with chain shortening elements or swivel tensioners, are allowed. The shortening elements must be designed in such a way that they cannot loosen or spontaneously disengage. In the event that (by using steel ropes or chains without shortening devices) secondary safety elements granting an acceptable tolerance in terms of descent, are used, (= max. 10 cm), it will be necessary to prove, through calculations that shall take into account the intervention of dynamical forces, that their related dimensions turn out to be sufficient.

Some application examples are described here below.

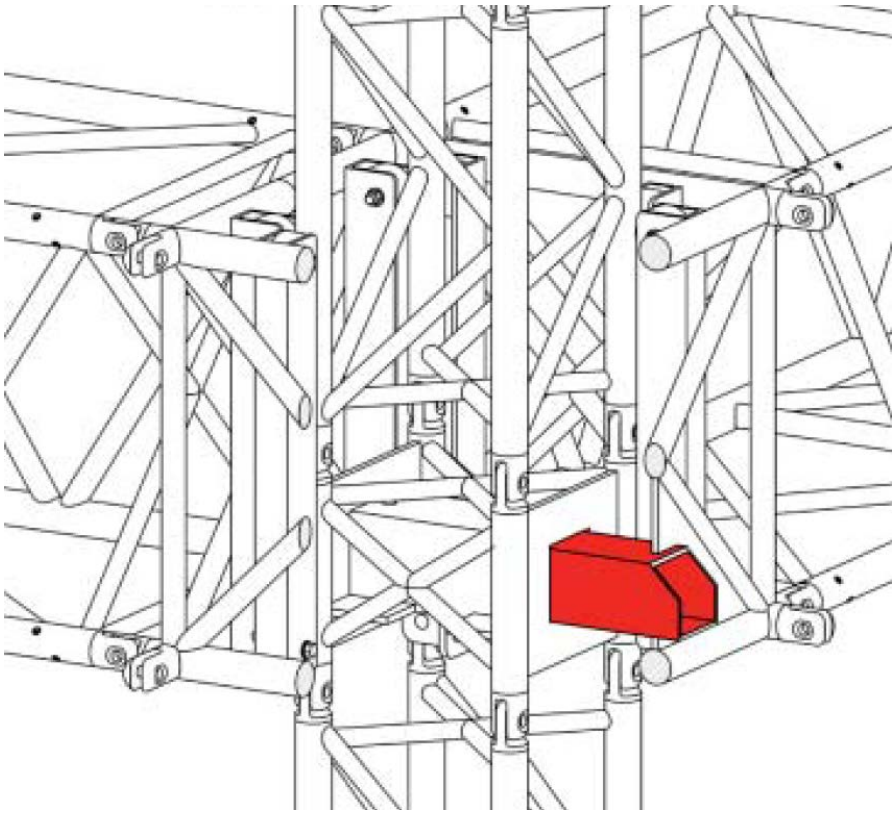


*Figure 13: Example of locking with locking bars (for ex. when tower systems or scaffolding covering are used)*

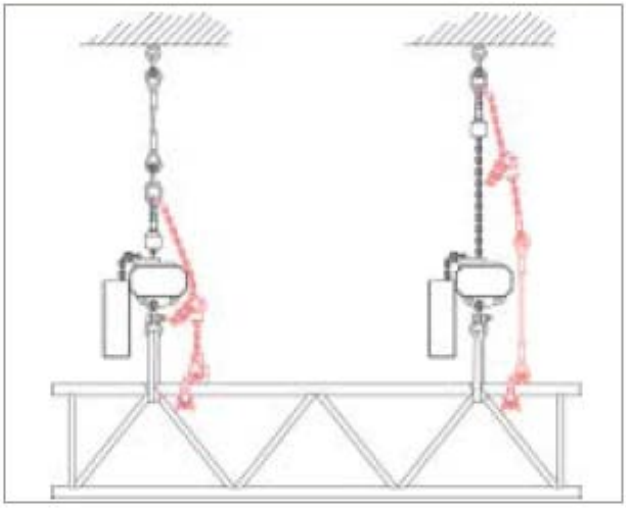


*Figure 14: Example of secondary safety component without descent with safety rope or chain A (front view)*

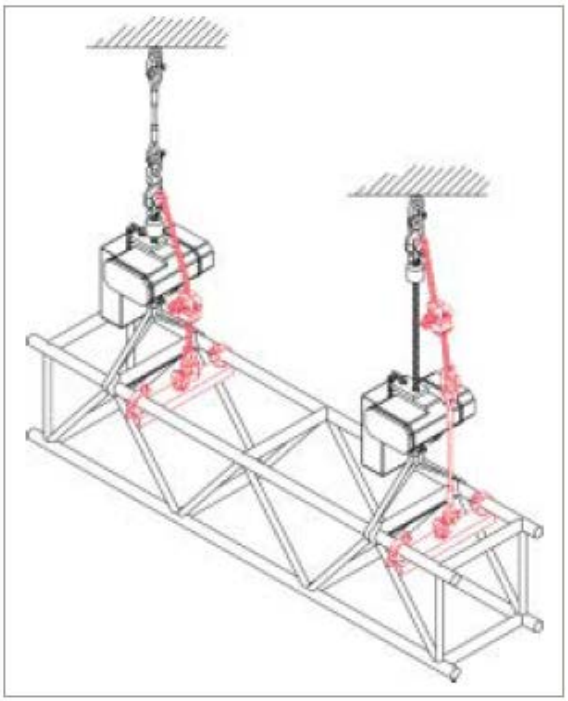


*Figure 15: Example of secondary safety component without descent with safety rope or chain A (perspective view)*

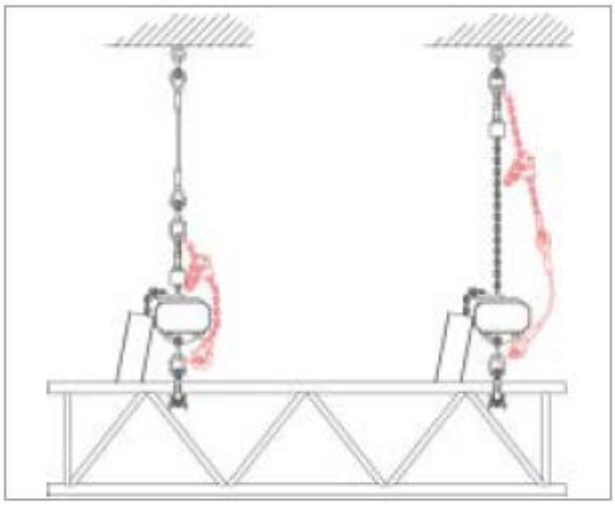


*Figure 16: Example of secondary safety component with descent with safety rope or chain B (front view)*

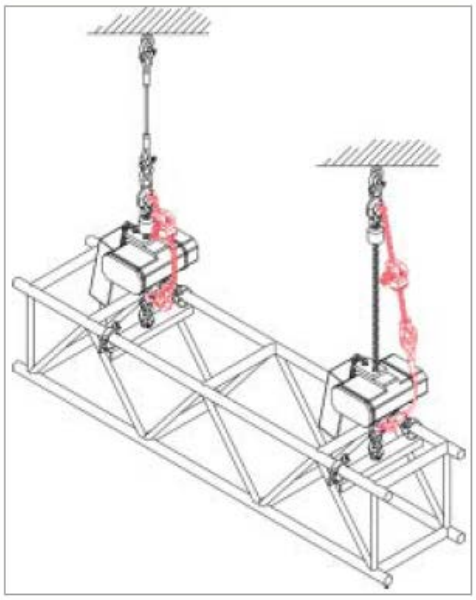


*Figure 17: Example of secondary safety component with descent with safety rope or chain B (perspective view)*

# 3 INSTALLATION

The safety directions for handling with loads should be followed (see paragraph 2.3) when transporting and assembling the electric chain hoist.

Electric chain hoists must be assembled by qualified staff, always bearing in mind the accident prevention directions in chapter 2. Before assembly the electric chain hoist must be stored in an enclosed room or covered area.

Should the electric chain hoist be destined for operation outdoors, then it is recommended that a protection cover is erected to shield it from the effects of the weather.
Wherever possible, the electric chain hoist should be transported in its original packaging. The goods delivered should be checked for completeness and the packaging disposed of in an environmentally sound manner.

## 3.1 General safety measures

During the transport of the packaging, the liability that the load does not suffer damage lies with the carrier. Upon delivery, the customer must carefully check packaging conditions and be sure it is not damaged.

Before any operation of packaging transport or hoist handling, free transit routes from possible obstacles in order to allow the safe passage, and send away people not in charge of handling.

**WARNING !**
Lifting, shifting and handling operations must be carried out by trained personnel, duly equipped. Do not halt, for any reason, below suspended loads during lifting operations.

During transport with trolleys or cranes, the presence of a suspended load must be acoustically and visually signalled.

During handling with work equipment (lift truck, gantry, etc), in addition to the presence of the operator, the presence of one person on the ground who follows operations and gives possible indications, is always required. Such personnel must keep at a safe distance from the load.

Packaging elements, such as plastic bags, expanded polystyrene must not be released to the environment but must be kept in order to pack again the hoist after using it.
During works in height, the operator must use access means in height (platform or ladder) and anti-fall protection devices in compliance with regulations in force on safety at work.

## 3.2 Packaging storage

The elements, inside the packaging, are protected against possible spoilage in case of medium-term storage (6 months); notwithstanding this, packaging must be kept in a dry place.
It is prohibited to stack other boxes or various types of loads on the cardboard packing.

Should the hoist not be operated immediately, it is recommended to store it inside its packaging, in a covered, possibly dry and clean area, far from heat sources or vibrations that might jeopardise its integrity.

## 3.3 Packaging transport

Packing must be transported up to the envisaged installation point for the hoist.
The flight-case is equipped with translation wheels; therefore, if possible, it must be simply hand-pushed. Should obstructions be overcome, it can be lifted by two or more persons by holding the special handles.
On the contrary, the cardboard box must be transported by lifters or equivalent equipment.

## 3.4 Unpacking and ground handling of the hoist

The hoist must be removed manually from the packing.
Check that the hoist has not suffered damage arising from an inadequate transport. Check the hoist frame for dents, the external cables for damaged or cut insulation, the controller for cut or damaged housing and inspect the load chains for dents or notches. If a damage arising from shipment has been detected, refer to the accompanying document envelope on the box for the claim procedure.

Possible claims related to hoist damages, must be presented within 8 days from receipt of the goods; in any case, it must be pointed out that the hoist is subject to an accurate inspection in every part before being packed and shipped to the customer.

Never throw packing materials away: they are the ideal containers for transporting the hoist to another place of use. In case of transfer to another place, or non-use for a long time, pack it again and keep it in a dry place.

Place the hoist on the ground and hook the bag again; make sure that the spring catches of the bag have been correctly closed.

## 3.5 Checks before use

- Check integrity of the plug and wires.
- Check integrity of the hoist metal housing
  - No cracks or dents must be present
  - All fixing screws must be present and they must not be loosened
  - No liquids must be accidentally entered.
- Check that the two hooks are equipped with entry closing tongues and that they are intact.
- Inspect the chain bag for possible slackening in the related fixing spring catches or foreign bodies inside it or water accumulations.
- Check brake function by tensioning the hoist prior to each lift operation.

## 3.6 Assembly of hoist

Before every assembly, the anchoring points of the structure where the hoist will be assembled must be visually inspected. The hoist and all the parts and devices required for its functioning (for ex. bearing elements, control units and equipment), must also be visually inspected.

**WARNING !**
The chain and the frame of the hoist must not come into contact. The hooking point for the chain must grant the least hindrance as regards the conditions of final use of the hoist.
The hoist must be assembled in such a way that the chain cannot move forward obliquely.

Cables must be placed in such a way that they do not come into contact with sharp edges and do not run the risk to be cut off; in addition, they must not be subject to traction.

### 3.6.1 Fixing of the hoist on the ground (self-lifting mode)

Use this technique when the hoist cannot be easily taken and fixed to height. Leaving the hoist on the ground, unroll the chain, take the end to height, and fix the hook to the anchoring point.
Once the hoist is connected to the power supply and activated, it lifts by itself.

Figure 18: The hoist mounting in self-lifting mode.

### 3.6.2 Fixing of the hoist to height

Use this technique when the hoist can be easily taken and fixed to height. Lift the hoist (for example with another hoist or equivalent lifting equipment) and hook it to the anchoring point of the structure.

*Figure 19: The hoist must be lifted and hooked to the anchoring point of the structure.*

## 3.7 Connections

**WARNING !**
Before connecting the hoist to the power supply, check that voltage and power of the electric line correspond to those reported in Table 1; check also that the earthing system of the factory is sufficient.

Installers must equip the branch circuit with an earthing system and a protection against current overloads that comply with the requirements of the laws on safety and health protection on work place of the Country where the hoist is installed.
Check that the cables powering the hoist are protected against possible external damages (risk of electrocution and malfunctioning).

**WARNING !**
Do not insert the plug of the hoist directly into a power socket: the hoist would suddenly start. Insert the plug of the hoist into that of the mobile controller.
Insert the other plug of the controller into the power socket.

**WARNING !**
Dangerous voltage lowering can be caused by excessively long extension cords.

The following chart should be used to determine the size of the wires in the extension cord in order to minimize the voltage drop between the power source and the hoist.

| Length of extension cord | Minimum wire size |
|---|---|
| Up to 15.2 m. | 1.6 mm. |
| 24.4 m. | 1.6 mm. |
| 36.7 | 2.0 mm. |
| 61.0 | 2.0 mm. |
| 91.4 | 2.7 mm. |

*Table 7: Minimum wire size*

## 3.8 Testing

**WARNING !**
Before the first commissioning of the hoist (that is to say, the first time the equipment is operated) and after every assembly at a new site, a test of the hoist must be carried out.

The purpose of such test is to ensure that the equipment has been correctly assembled and works in a safe way. The results of the test must be written in the report.

In addition to the indications mentioned here below, the possible provisions of law of the Country of use provided for lifting equipment, must be followed.

For visual inspections check the integrity and efficaciousness of the following elements:

- connection to power supply;
- frame of control lines;
- hooking point, on the frame, of the bearing element;
- hooking point, on the frame, of the chain gathering unit;
- marking and labels affixed to the hoist;
- load chain and hooks;
- missing parts (connection between steel chains and motor/load hook).

# 4 USE OF HOIST

Improper operation of the hoist can create a potentially hazardous situation which, if not avoided, could result in death or serious injuries. Permit only authorised and qualified personnel to operate unit. Do not use the hoist or any other overhead materials handling equipment for lifting persons.

**WARNING !**
STAY ALERT! Watch what you are doing and use common sense. Do not use the hoist when you are tired, distracted or under the influence of drugs, alcohol, medication causing diminished control.

- Do not use the hoist if it is not perfectly efficient, even if it can work.
- Do not use the emergency stop button to habitually stop hoist motion.
- Do not carry out operations or manoeuvres on one's own initiative that do not fall within one's area of expertise and can compromise the safety of everyone.
- Do not wear personal clothes, particularly large or with flapping parts that can get entangled in the moving parts.
- The controller must be positioned in such a way that the hoist manoeuvre cannot cause additional risks, such as for example, from the ergonomics point of view (incorrect postures, fatigue), the risk of shock and fall against the handled load.
- Before using the hoist, each operator should become thoroughly familiar with all warnings, instructions and recommendations indicated in this document.
- Do not allow your attention to be diverted when operating hoist: always watch the intervention area.
- Under no circumstance should the hook block or load be permitted to come into contact with the chain container/bag. If contact is made, the function of the chain container can be interfered with and its fasteners imperilled.
- Do not come close to the moving chain: risk of becoming entangled or dragging.
- In the intended conditions of use, the User's discomfort, fatigue, stress, must be minimised, taking into account the ergonomics principles.
- In order to ensure a long duration and the best performance, follow the chain lubrication instruction (see paragraph 5.4.7).
- It is prohibited to warm equipment with flames, hot air or with other instruments if they are stiffened or blocked.
- Call your dealer if the hoist does not work properly.

**WARNING !**
Should damaged or worn parts be detected, the hoist cannot ensure the maximum guarantee and, therefore, assistance must be required.

## 4.1 Hooking and handling of load

**Insert the hoist hook (intended for load lifting) into the load anchoring point.**

- Do not load hoist beyond the rated capacity shown on hoist identification plate.
- Make sure hook travel is in the same direction as shown on the controls.
- Check to be sure that the attachments to the load hook are firmly seated. Make sure the hook latches are closed and not supporting any part of the load.
- Check to ensure that the load point is in line with the hoist head. WHEN APPLYING A LOAD, IT MUST BE DIRECTLY IN LINE WITH THE HOIST. AVOID OFF CENTRE LOADING OF ANY KIND.

- Make sure the load has enough room to be free to move: no obstructions must be present along its travel.
- Do not allow the hook to swing (risk of collision against things or people).
- Do not wrap the hoist chain around the load or use it to carry out operations other than those indicated. The loss of the swivel effect of the hook could result in twisted chain and a jammed lift wheel.
- The chain could be damaged at the hook.

**Handle the load by using control buttons with a man present. Motion stop occurs upon release of the activated button.**

- Maintain a firm footing or be otherwise secured when operating the hoist.
- Before handling load, check for twists in the load chain. A twist can occur if the lower hook block has been capsized between the strands of chain. Reverse the capsize to remove twist.
- Make sure the load is free to move (it must not be fixed to the ground, entangled, etc.).
- Raise the load only enough to check the attachments to the hook and load are firmly seated.
- Handle the load slowly to avoid shock and jerking of load chain. If there is any evidence of overloading, immediately lower the load and remove the excess load.
- Do not allow the load to swing.

During handling of the load with the hoist, the presence of an operator taking care of process monitoring, is required. During handling, make sure the load does not hit obstructions or someone comes too close to the load or chain. In case of necessity, immediately stop motion.

## 4.2 Power Supply

EXE-Rise chain hoists are available in both direct and low voltage control. They must be connected to a power and control system that is suitably designed to operate the chain hoists and handle the power consumption of the motor.
EXE-Rise chain hoists are standard wired for 400V-3ph-50Hz operations. For other voltages the chain hoist motor must be re-wired internally.

**WARNING !**
Electrotechnical adjustments may only be performed by authorised specialists.

### 4.2.1 Mechanical bypass of hoist

Should the hoist stop due to anomaly, overload, etc. and the load must be lowered (for example, a structure,) proceed as follows:

The operations mentioned below must be carried out by qualified technical personnel.
During mechanical bypass, do not operate the hoist if the area surrounding the suspended load is not, and does not remain, cleared from persons. The User, from his control place, must be able to be sure of the absence of persons in the risk area.

Clear the underlying area. Tie off the load by applying a mechanical safety device that by-passes the lift mechanism from hook to hook (refer to the examples of secondary safety components (see paragraph 2.9).

Lower the load.

## 4.3 Shutdowns for long periods

In case of prolonged downtime, the hoist must be stored according to the precautions related to the place and times of storage:

- Grease the chain
- Pack the hoist again
- Keep packaging in a safe, covered place (protected against shocks or contamination of corrosive substances), protected against humidity or high differences in temperature (maximum temperatures: -10°C to 40°C).

# 5 MAINTENANCE OF HOIST

Simple inspection of the hoist and lubricating of the chain, are the only interventions allowed to the user of the hoist.

All other maintenance, replacement, adjustment interventions that involve the opening of the hoist housing, are allowed only to maintenance service authorised by LITEC.

The hoist must therefore be delivered to LITEC authorised centre that will issue special control and maintenance reports.

**WARNING !**
Maintenance and service are preventive measures designed to preserve the full functionality of electric chain hoists. Non-compliance with maintenance and service routines can result in reduction in the useful function of and/ or damage to chain hoists.

Maintenance work encompasses visual checks and cleaning routines. Service work includes additional functional checks. During the functional checks, all securing elements and cable clamps must be checked for secure seating.

During maintenance and service work, general accident prevention directions, special safety directions as well as hazard protection instructions (paragraph 2.3) should be followed.

## 5.1 General Safety rules

- Working inside or near powered equipment can result in electric shock: before carrying out interventions on the hoist, always disconnect power supply and make sure that no one can insert the plug again until the end of the intervention.
- When possible, maintenance must be carried out without suspended load; failing this, the area must be enclosed and watched and the load must be held by means of a secondary safety component (see paragraph 2.9).
- Do not wash the hoist and controller with nozzle (hydro-cleaner).
- Keep control and maintenance reports issued by LITEC together with the manual.
- All maintenance, repair, adjustment, cleaning operations must be carried out only by qualified personnel duly trained and competent, who has looked over this document.
- Maintenance must be carried out by wearing individual protection devices and using adequate equipment in good conditions.
- In case of poor ambient lighting, install a lamp for local lighting for maintenance interventions or use adequate portable devices.
- In case of replacement for damage (for cut off, jerk, etc.), wires must have a size adequate to the length of the wires themselves and powers installed.
- Use only spare parts identical to those to be replaced or previously authorised by the manufacturer.
- Follow industrial hygiene rules during cleaning of the machine.
- In case of intervention in height, access, and operation must be carried out by using working equipment (ladders, mobile towers, etc.) in compliance with the regulations in force on safety at work.
- No makeshift repairs with the aid of extra pieces or taping are allowed. It is prohibited to warm equipment with flames, hot air or other instruments in case they are stiffened or blocked.
- In case of a previous intensive use of the hoist, before intervening on its internal components, wait for the cooling of its parts.

## 5.2 Safety procedure

Before carrying out any kind of maintenance, repair, cleaning or any activity that requires a manual intervention on the machine, disconnect power supply by pulling out the plug from the socket.

If the maintenance operator has not a direct visibility and control on the plug, against possible unauthorised restorations, a board must be affixed to the plug with the writing “MACHINE UNDER MAINTENANCE – DO NOT PLUG IN” in a well visible position.

**WARNING !**
Before restarting the working cycle, make sure all protections and protection devices in case removed, are operating and properly functioning.

## 5.3 Summary of periodic maintenance

In order to keep a continuous and satisfactory operation, a regular inspection procedure must be initiated to replace worn or damaged parts before they become unsafe. Inspection intervals must be determined by the individual application and are based on the type of service to which the hoist will be subjected and the degree of exposure to wear, deterioration or malfunction of the critical components.
Check periodically that all the labels are present and readable on the hoist.

In addition to the below mentioned maintenance, periodic maintenance envisaged for lift equipment in the Country of use, must be followed.

The type of service to which the hoist is subjected can be classified as "Normal", "Heavy", or "Severe".

**Normal Service**: Involves operation with randomly distributed loads within the rated load limit, or uniform loads less than 65 percent of rated load for not more than 25% of the time.

**Heavy Service**: Involves operating the hoist within the rated load limit which exceeds normal service.

**Severe Service**: Normal or heavy service with abnormal operating conditions.

Two classes of inspections – frequent and periodic – can be performed

**Frequent Inspections**: These inspections are visual examinations by the operator or other designated personnel. Records of such inspections are not required. The frequent inspections are to be performed monthly for normal service, weekly to monthly for heavy service, and daily to weekly for severe service, and they should include those items listed in Table 9.

**Periodic Inspections**: These inspections are visual inspections of external conditions by an appointed person. Records of periodic inspections are to be kept for continuing evaluation of the condition of the hoist. Periodic inspections are to be performed yearly for normal service, every six months for heavy service and quarterly for severe service, and they are to include those items listed in Table 10.

**WARNING !**
Any deficiencies are to be corrected before the hoist is returned to service. Also, the external conditions may show the need for more detailed inspections, which, in turn, may require the use of non-destructive type testing.

**In addition to the above inspection procedure, a preventive maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use.** The program should include the periodic and frequent inspections with particular attention being paid to the

lubrication of the various components using the recommended lubricants. For reduction gear please use **LITEX-EP/1 lubricant** on 320kg D8/160kg D8+ chain hoists and **Mobil Gear 600xP460** on all other chain hoists.

*Table 8: Minimum frequent inspections*

| TYPE OF SERVICE | | | ITEM |
|---|---|---|---|
| Normal | Heavy | Severe | |
| Monthly | Weekly to monthly | Daily to weekly | a) Brake for evidence of slippage.<br>b) Control functions for proper operation.<br>c) Hooks for damage, cracks, twists, excessive opening, latch engagement and latch operation<br>d) Load chain for adequate lubrication, as well as for signs of wear, damaged links or foreign bodies<br>e) Load chain for proper reeving and twists. |

*Table 9: Minimum periodic inspections*

| TYPE OF SERVICE | | | ITEM |
|---|---|---|---|
| Normal | Heavy | Severe | |
| Yearly | Every six months | Every three months | a) All items listed in Table 9 for frequent inspections.<br>b) External evidence of loose screws, bolts, nuts.<br>c) External evidence of worn, corroded, cracked or distorted hook block, suspension screw, bearings and dead end block and chain pin.<br>d) External evidence of damage to hook retaining nut and pin.<br>e) Check the operation of the controller making sure the buttons operate freely and do not stick in either position.<br>f) Check the electrical cords and cables and controller for damaged insulation.<br>l) Inspect for signs of lubricant leaks. |

## 5.4 Maintenance assistance

### 5.4.1 Hook inspection

Hooks damaged from chemicals, deformations, or cracks, or that have a 10° twist from the hook's unbent plane, excessive opening must be replaced.

Also, hooks that are opened and allow the latch to not engage the tip must be replaced. Any hook that is twisted or has excessive opening indicates abuse or overloading of the unit. Inspect other load sustaining parts, hook block screws, load pins and chain block body for damage.

On latch type hooks, check to make sure that the latch is not

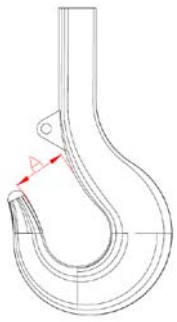


*Figure 20: To measure the opening, the thrust bearing must be pushed against the body of the hook*

damaged or bent and that it operates properly with sufficient spring pressure to keep the latch tightly against the tip of the hook and allow the latch to spring back to the tip when released.

If the latch does not operate properly, it should be replaced. If the opening is greater than 5% the normal value.

### 5.4.2 Chain inspection

Chain should feed smoothly into and away from the hoist or hook block. If chain binds, jumps or is noisy, first clean and lubricate it (see below). If trouble persists, inspect chain and mating parts for wear, distortion or other damage.

**WARNING !**
Use of commercial or other manufacturers' chain and spare parts to repair the hoist may cause load loss. Use only chains and spare parts supplied by the manufacturer.

### 5.4.3 Clutch maintenance

Any intervention on the clutch is prohibited. Only LITEC authorised maintenance service is allowed to carry out possible maintenance interventions.

### 5.4.4 Brake maintenance

Any intervention on the Brake is prohibited. Only LITEC authorised maintenance service is allowed to carry out possible maintenance interventions.

### 5.4.5 Limit switch maintenance

The device is calibrated in a standard way at the factory. Operators can adjust it according to their specific needs.

### 5.4.6 Periodic testing

The hoist must be tested at least once a year and every four years by an expert authorised for the purpose. In case of heavy services or intensive use, the user must carry out additional extraordinary testing based on his own risk evaluation. In case of heavy services or intensive use, the user must carry out additional extraordinary testing based on his own risk evaluation. Periodic testing must be required and carried out by the LITEC maintenance service.

### 5.4.7 Load chain lubrication

Before lubricating the chain, secure the hoist.
To assure extra long life and top performance, be sure to lubricate the chain using the lubricants specified below. A small amount of lubricant will greatly increase the life of load chain. Do not allow the chain to run dry.
Keep it clean and lubricate at regular intervals with chain oil. Normally, weekly lubrication and cleaning is satisfactory, but under hot or dirty conditions, it may be necessary to clean the chain at least once a day and lubricate it several times between cleanings. When lubricating the chain apply sufficient lubricant to obtain natural run-off and full coverage, especially in the interlink area.

**WARNING !**
Used motor oil contains known carcinogenic components.
TO AVOID HEALTH PROBLEMS: Never use used motor oil as a chain lubricant.

Keep load chain well lubricated.

**WARNING !**
Lubricants must not be ingested and must be handled with care; in case of contact with delicate parts, immediately call a doctor. Follow safety indications mentioned in the safety reports of the product used.

**CAUTION !**
Used operating materials (oil, lubricants, etc.) should be safely collected and disposed of in an environmentally friendly manner.

### 5.4.8 Decommissioning criteria for bearing elements

The hoist bearing elements must be decommissioned when, from the evaluation of the following elements, their safety of use is no more granted:

a) deformation of steel chain or load hooks
b) worn or damaged steel chain or load hooks.

### 5.4.9 Replacement of a fuse

Before replacing a fuse, the hoist must be secured. The new fuse must have the same characteristics as the replaced fuse.

### 5.4.10 Extraordinary testing

In case of extraordinary events which can jeopardise the safety of the working equipment, extraordinary testing must be carried out. In particular, extraordinary events include accidents, modifications to the hoist, prolonged downtime periods and natural phenomena.

Testing must be carried out only by qualified personnel, duly authorised for the purpose.

## 5.5 Extraordinary maintenance

The following operations:

- replacement of equipment structural parts;
- adjustments, repairs or replacement of parts for the electrical system;
- other operations not envisaged in this document

are not included in the normal ordinary maintenance operations, therefore, an intervention request for qualified and authorised personnel is necessary, by calling the manufacturer.

## 5.6 General overhaul

The provisions on industrial hygiene and safety provided by EC Directive 98/37 require the exclusion of all the risks deriving from fatigue and ageing of machinery. Furthermore, this request is contained in the 3rd updating of UW/BGV D8 (VBG8) industrial injuries rules of April 1, 1996. In compliance with these rules, the

user of serial lifting equipment is compelled to determine the real use of the chain hoist based on the working hours, load profiles and/or recording coefficients. For this purpose, reference is made to FEM 9.755/06.1993 standard that defines measures for achieving safe periods of use for serial motorised chain hoists (S.W.P.). Please see paragraph 2.1.

From the mentioned FEM 9.755 standard, the following points referring to the electric chain hoist have been extrapolated:

1) the definition of the real use calculated based on the operating time and load, must be documented at least once a year.
2) the operating time T (daily use hours) can be estimated or recorded through an hour meter. The load K (duty factor) must be estimated.
3) When the operating time T is recorded by an hour meter, the read value must be multiplied by the recording coefficient 1.1.
4) When the operating hours and duty factor are estimated values, they must be multiplied by the recording coefficient 1.2.
5) The real use S is calculated with the formula: S = k x T x f.
6) Upon reaching the theoretical life, a general servicing must be carried out.
7) All the verifications and general servicing are at the chain hoist user's charges. General servicing includes the overhaul of the machine in order to detect structural elements and/or particulars which are already defective or ready to become defective, and replace them. After general servicing, for what concerns the operation and performance, the machine is in the same conditions as a new one.

Please consider the calculation of the duty factor, the additional factor and theoretical period of use.

# 6 TROUBLESHOOTING

*Table 10: troubleshooting based on hoist behaviour*

| TROUBLE | PROBABLE CAUSE | CHECK AND REMEDY |
|---|---|---|
| 1) Hook does not respond to the controller or control device | a) No voltage at hoist main line or branch circuit switch open; branch line fuse blown or circuit breaker tripped. | a) Close switch, replace fuse or reset breaker |
| | b) Phase failure – open circuit, grounded or faulty connection in one line of supply system, hoist wiring, reversing contactor, motor leads or windings. | b) Check for electrical continuity and repair or replace defective part. |
| | c) Open control circuit-open or shorted winding in transformer, reversing contactor coil or loose connection or broken wire in circuit; mechanical binding in contactor control station contacts not closing or opening. | c) Check electrical continuity and repair or replace defective part. |
| | d) Wrong voltage or frequency. | d) Use the voltage and frequency indicated on hoist identification plate. |
| | e) Low voltage. | e) Correct low voltage condition. |
| | f) Brake non releasing-open or shorted coil winding; armature binding. | f) Correct low voltage condition. |
| | g) Excessive load. | g) Reduce loading to the capacity limit of hoist as indicated on the identification plate. |
| 2) Hook moves in wrong direction | a) Phase reversal. | a) Refer to installation instruction in chapter 3. |
| 3) Hook lowers but will not raise. | a) Excessive load mechanical load protector slipping. | a) Refer to installation instruction in chapter 3. |
| | b) Open hoisting circuit-open or shorted winding in reversing contactor coil loose connection or broken wire in circuit; control station contacts not making; upper limit switch contacts open. | b) Check electrical continuity and repair or replace defective part. |
| | c) Phase failure. | c) See item 1b |
| 4) Hook raises but will not lower. | a) Open lowering circuit-open or shorted winding in reversing contactor coil, loose connection or broken wire in circuit; control station contacts not making; lower limit switch contacts open. | a) Check electrical continuity and repair or replace defective part. |
| 5) Hook lowers when hoisting control is operated. | a) Phase failure | a) See item 1B |
| | b) Phase reversal. | b) Refer to installation instruction in chapter 3. |
| 6) Hook does not stop promptly | a) Brake slipping. | a) Check brake. |
| | b) Excessive load. | b) See item 1H |
| 7) Hoist operates sluggishly | a) Excessive load | a) See item 1H |
| | b) Low voltage | b) Correct low voltage condition. |
| | c) Phase failure or unbalanced current in the phases. | c) See item 1b. |
| | d) Brake dragging. | e) Check brake. |
| 8) Motor overheats. | a) Low voltage. | a) Correct low voltage conditions. |
| | b) Excessive load. | b) See item 1H. |
| | c) Extreme external heating. | c) Above an ambient temperature |

| | | |
|---|---|---|
| | | of 40°C (104°F) the frequency of hoist operation must be limited to avoid overheating of motor. Special provisions should be made to ventilate the space or shield the hoist from radiation. |
| | d) Frequent starting or reversing. | d) Avoid excessive inching, jogging or plugging. This type of operation drastically shortens the motor and contactor life and causes excessive brake wear. |
| | e) Phase failure or unbalanced current in the phase. | e) See item 1B. |
| | f) Brake dragging. | f) Check brake. |
| 9) Hook fails to stop at either or both ends of travel. | a) Limit switches not opening circuits. | a) Check switch connections, electrical continuity and mechanical operation. Check the switch adjustment. |
| | b) Limit switch shaft not rotating. | b) check for damaged Limit Switch gears. |
| | c) Travelling nuts not moving along shaft-guide plate loose; shaft or nut threads damaged. | d) Tighten guide plate screws. Replace damaged part. |
| 10) Hook stopping point varies. | a) Limit switch not holding adjustment. | a) see item 9. |
| | b) Brake not holding. | b)check the brake. |
| | c) binding of Limit Switch Shaft. | c) Check Limit Switch Bearing for proper seating. |

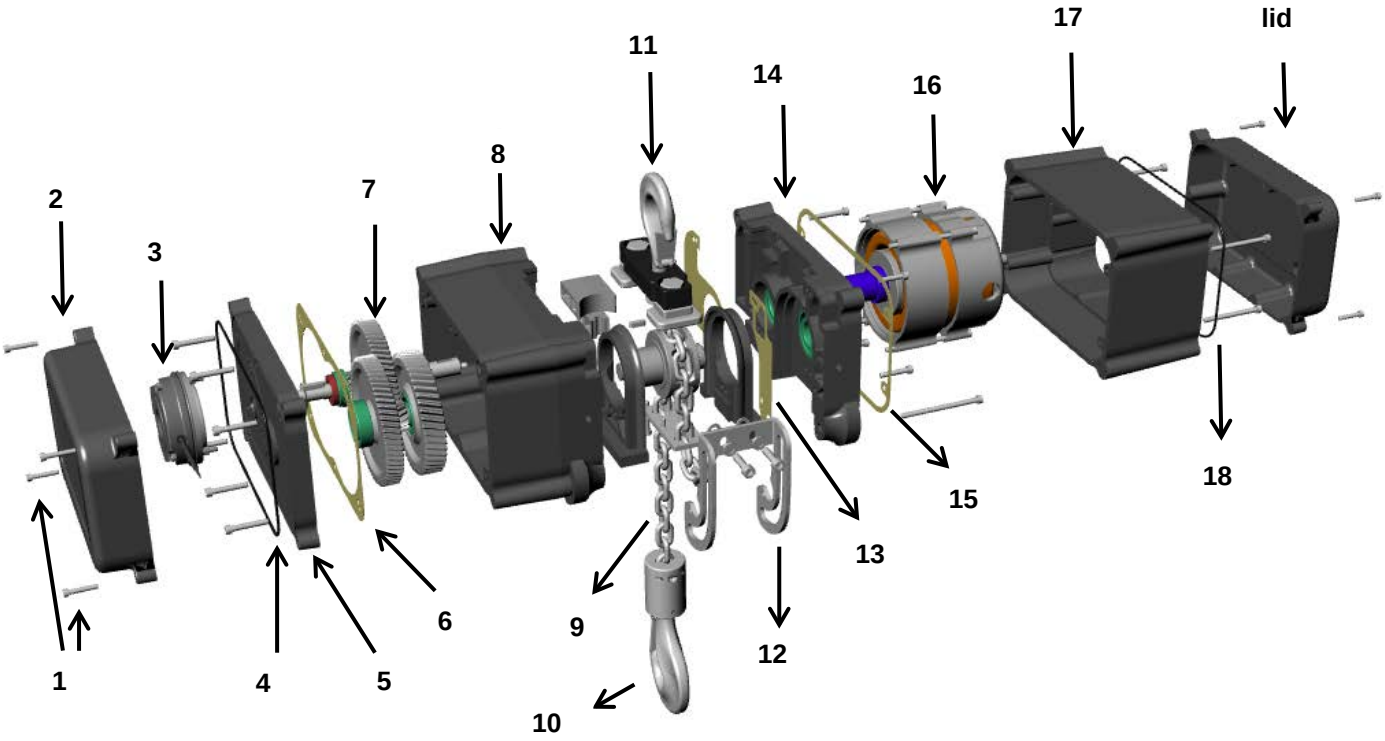
# 7 RECOMMENDED SPARE PARTS

To insure continued service of the EXE-Rise chain hoists, the following is a list of parts that are recommended to be kept on hand at all times to replace parts that have worn or failed.

**WARNING !**
USE ONLY ORIGINAL SPARE PARTS.

## 7.1 560-2,000kg EXE-Rise Hoists

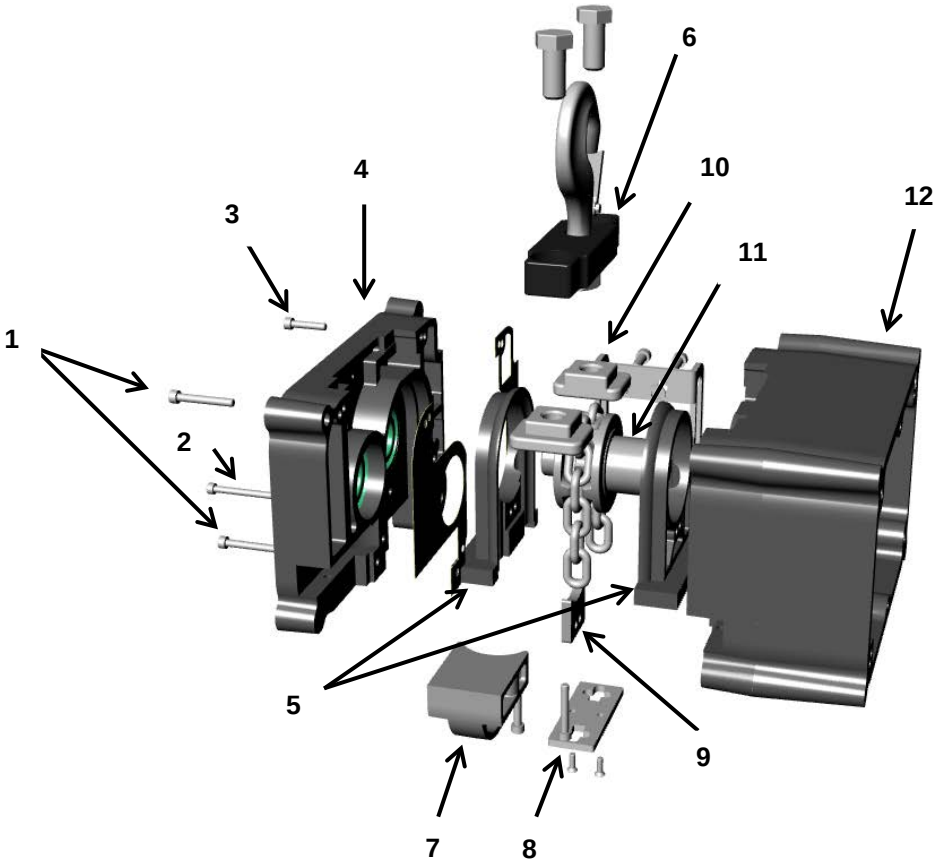
### 7.1.1 620-2,000 kg EXE-Rise chain hoists




**Parts for 560-2,000kg EXE-Rise Hoists**

| Ref. no. | Description |
|---|---|
| 1 | Screws |
| 2 | Lid |
| 3 | Brake |
| 4 / 18 | Gasket |
| 5 | Flange |
| 6 | Gear gasket |
| 7 | Reduction gear |
| 8 | Gear housing |
| 9 | Chain |
| 10 | Swivel hook |
| 11 | Hanging eye-bolt |
| 12 | Chain bag flask |
| 13 | Central body gasket |
| 14 | Motor flange |
| 15 | Motor flange gasket |
| 16 | Motor |
| 17 | Motor housing |
| 19 | Lid |

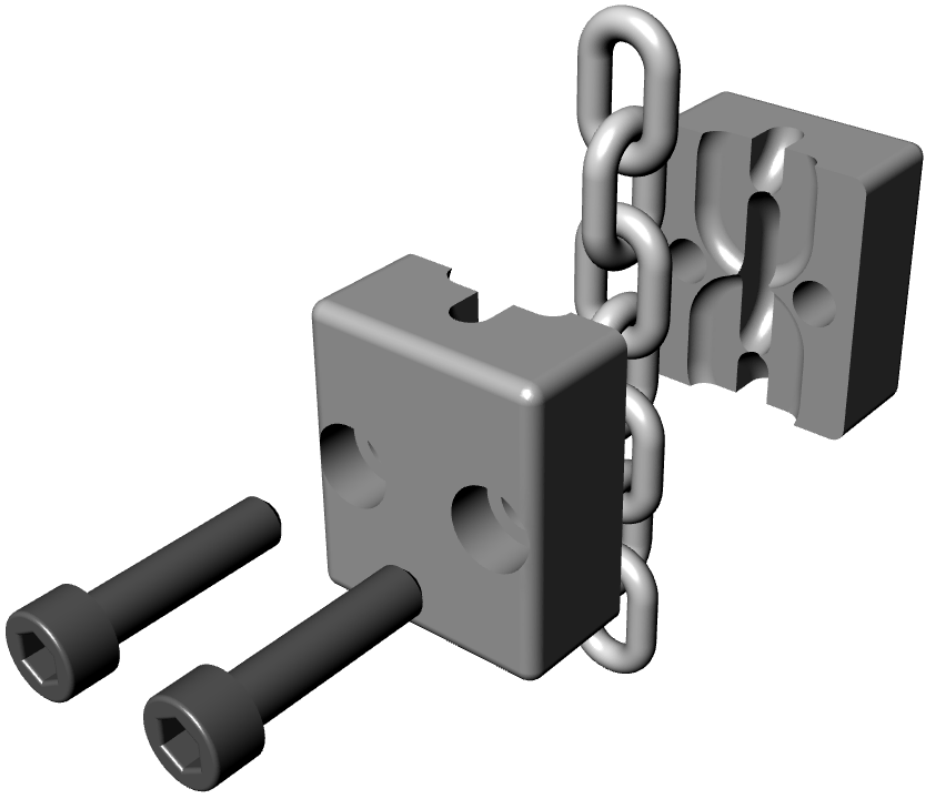
### 7.1.2 Main body




**Recommended parts for main body**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Screws | Screw Tcei 6x40 |
| 2 | Screws | Screw Tcei 6x35 |
| 3 | Screws | Screw Tcei 6x30 |
| 4 | Motor flange | RWL 1120-0201 |
| 5 | Chain guide | RWL 1120-0218 |
| 6 | Suspension assembly | RWL 1120-0059 |
| 7 | Dead end block | RWL 1120-0213 |
| 8 | Guide plate | RWL 1120-0011 |
| 9 | Chain connector | RWL 1120-0012 |
| 10 | T nut for suspension hook | RWL 1120-0058 |
| 11 | Lift wheel | RWL 1120-0020 |
| 12 | Reduction unit housing | RWL 1120-0202 |

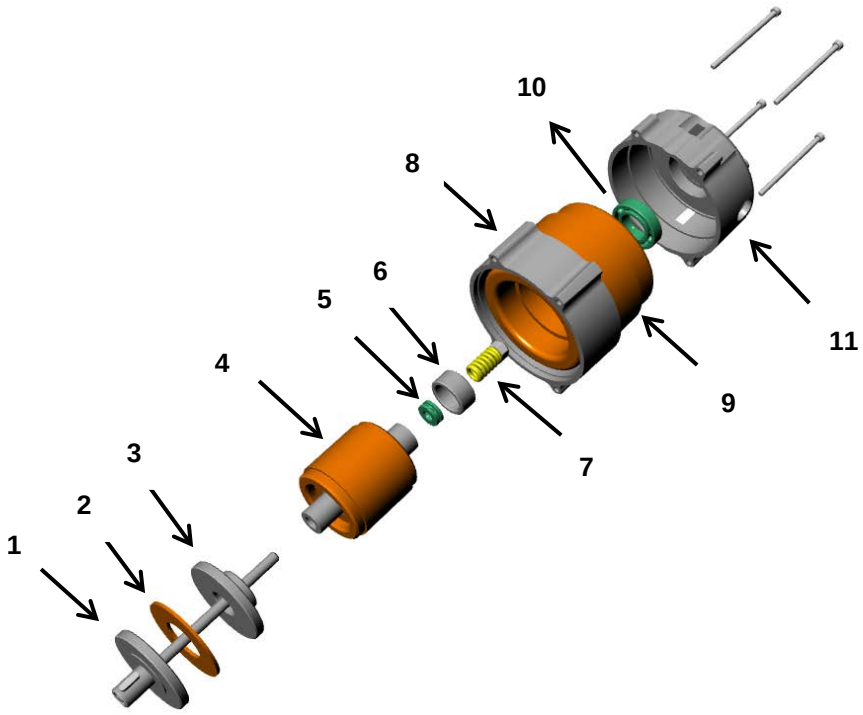
### 7.1.3 Chain fasteners



**Recommended parts for chain fasteners**

| Description | Part no. |
|---|---|
| Chain fastener for D8 620kg & D8+ 310kg | Chain fastener EXE-Rise 5x15 |
| Chain fastener for D8 1,120kg – 2,000kg & D8+ 560kg | Chain fastener EXE-Rise 7x22 |

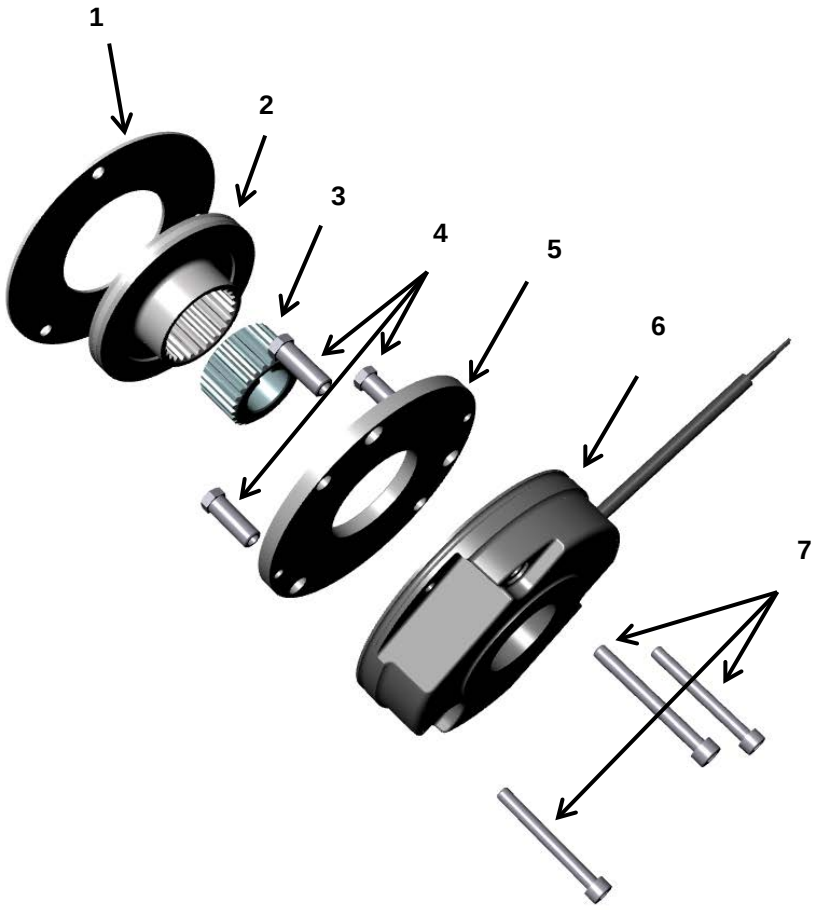
### 7.1.4 Clutch




**Recommended parts for clutch**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Clutch lower support | RWL 1120-0003 |
| 2 | Bakelite clutch | RWL 1120-0005 |
| 3 | Upper clutch support | RWL 1120-0006 |
| 4 | Rotor shaft 1120 | RWL 1120-0007 |
| 5 | Bearing for H60 shaft | 51100 |
| 6 | H60 Rotor bush | RWL 1120-0008 |
| 7 | Yellow spring for H60 rotor | RWL 1120-0217 |
| 8 | Motor ring | RWL 1120-0203 |
| 9 | H60 Stator | RWL 1120-0214 |
| 10 | H60 Bearing | 6006 |
| 11 | Motor guard | RWL 1120-0204 |

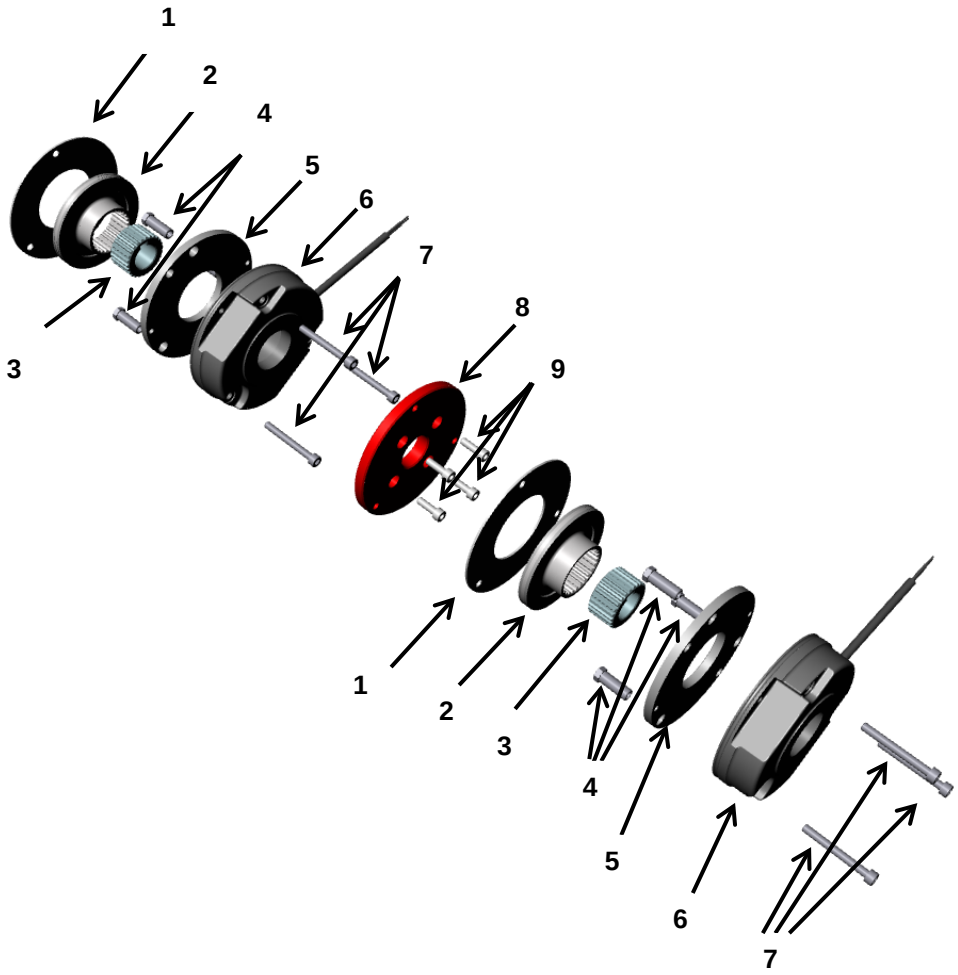
### 7.1.5 Single Brake Unit




**Recommended parts for single brake unit**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Brake disk | RWL 1120-0027 |
| 2 | Brake disk with shoes | RWL 1120-0218 |
| 3 | Disk hub | RWL 1120-0219 |
| 4 | Adjustment pins | RWL 1120-0220 |
| 5 | Brake anchor | RWL 1120-0221 |
| 6 | BFK458-08 Electromagnet | RWL 1120-0222 |
| 7 | Screws | Tcei 50x50 |

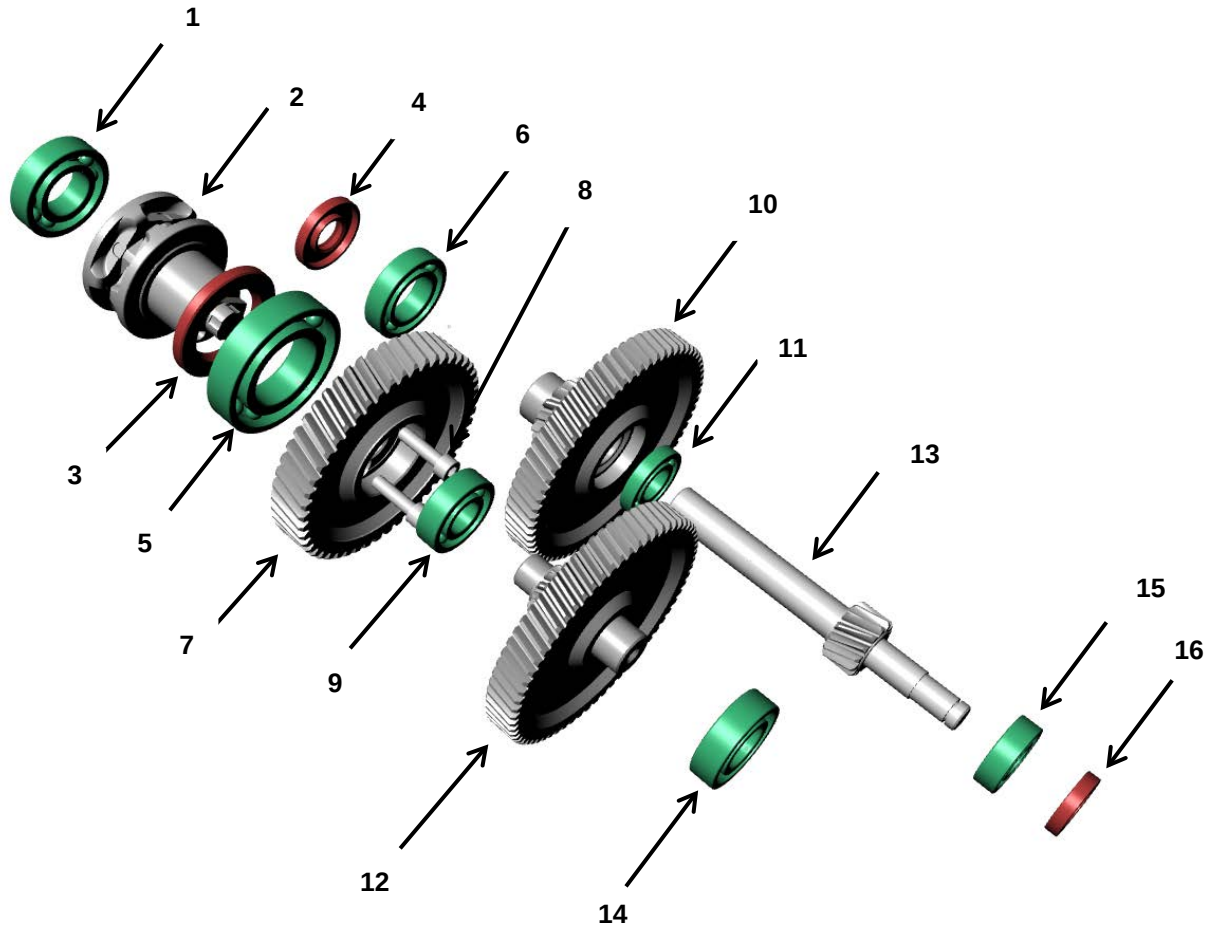
### 7.1.6 Double Brake Unit




**Recommended parts for double brake unit**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Brake disk | RWL 1120-0027 |
| 2 | Brake disk with shoes | RWL 1120-0218 |
| 3 | Disk hub | RWL 1120-0219 |
| 4 | Adjustment pins | RWL 1120-0220 |
| 5 | Brake anchor | RWL 1120-0221 |
| 6 | BFK458-08 Electromagnet | RWL 1120-0222 |
| 7 | Screws | tcei 50x50 |
| 8 | Joint double brake flange | RWL 1120-0010 |
| 9 | Screws | Tcei 5x45 |

### 7.1.7 Reduction Gear

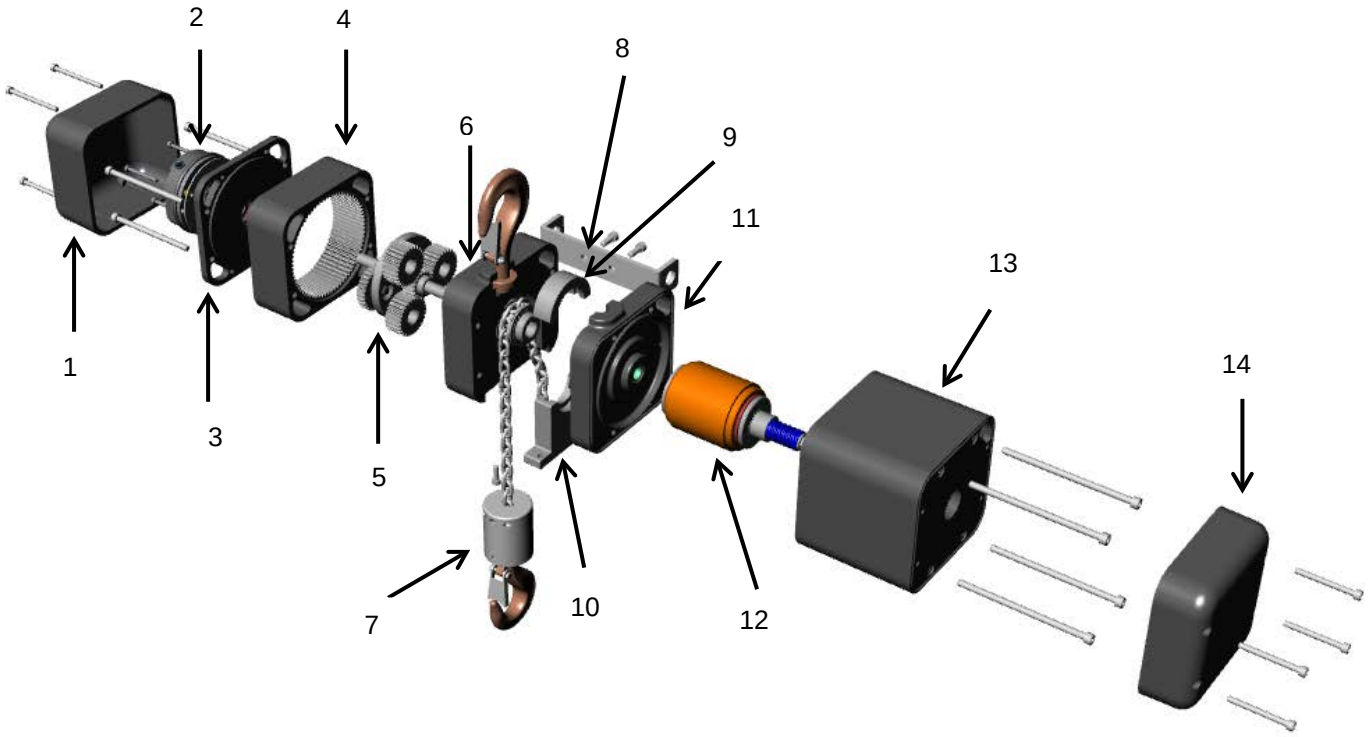



**Recommended parts for reduction gear**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Bearing | 6206 |
| 2 | Load wheel 7x5x22 | RWL 1120-0020 |
| 3 | Oil seal | 45-72-8 |
| 4 | Oil seal | 20-47-7 |
| 5 | Bearing | 6209 |
| 6 | Bearing | 6006 |
| 7 | Spiral bevel ring gear | RWL 1120-0021 |
| 8 | Screws | Tcei 8x25 |
| 9 | Bearing | 6204 |
| 10 | Spiral bevel ring gear | RWL 1120-0022 (middle) |
| 11 | Bearing | 16004 |
| 12 | Spiral bevel ring gear | RWL 1120-0024 (main) |
| 13 | Pinion gear | RWL 1120-0029 |
| 14 | Bearing | 6205 |
| 15 | Bearing | 6203 |
| 16 | Oil seal | 20-35-7 |

## 7.2 320kg EXE-Rise Hoist

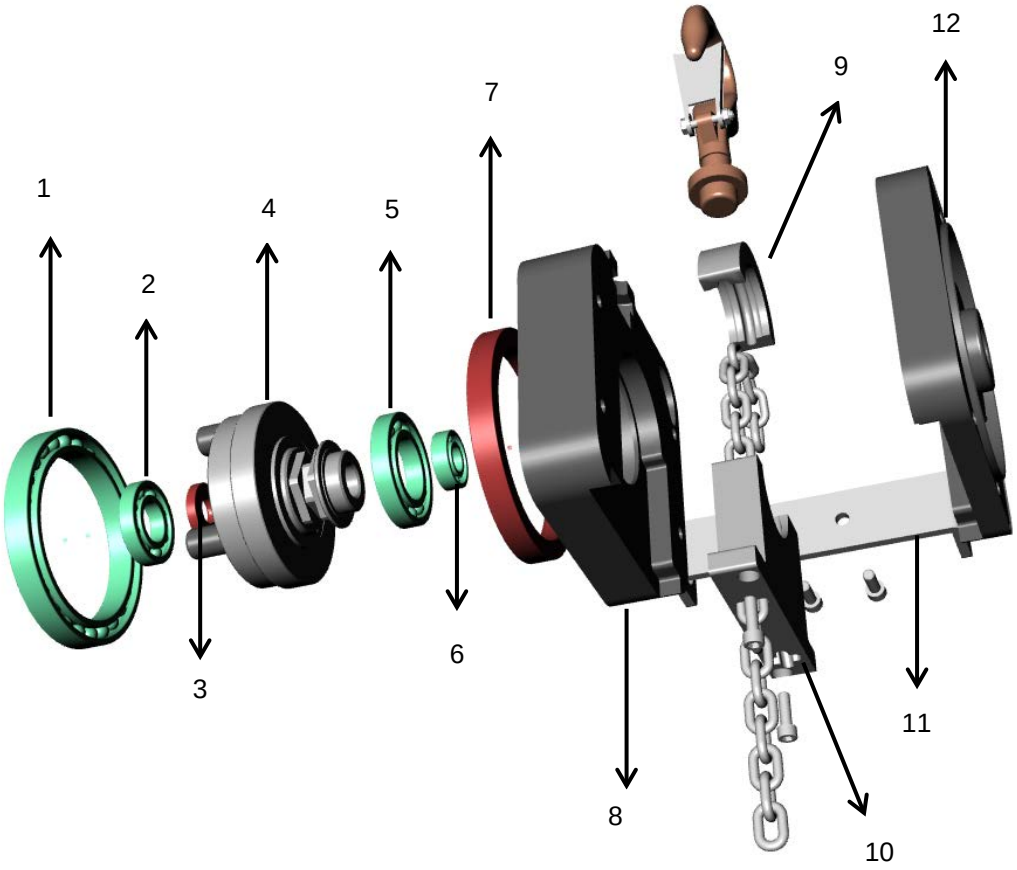
### 7.2.1 Exploded view




**Parts of 320kg EXE-Rise Hoist**

| Ref. no. | Description |
|---|---|
| 1 | Upper lid |
| 2 | Brake |
| 3 | Reduction flange |
| 4 | Reduction housing |
| 5 | Reduction unit |
| 6 | Main body from reduction unit side |
| 7 | Suspension hook |
| 8 | Chain bag bracket |
| 9 | Chain guide |
| 10 | Guide plate |
| 11 | Main body from motor side |
| 12 | Rotor assembly |
| 13 | Motor housing |
| 14 | Lower lid |

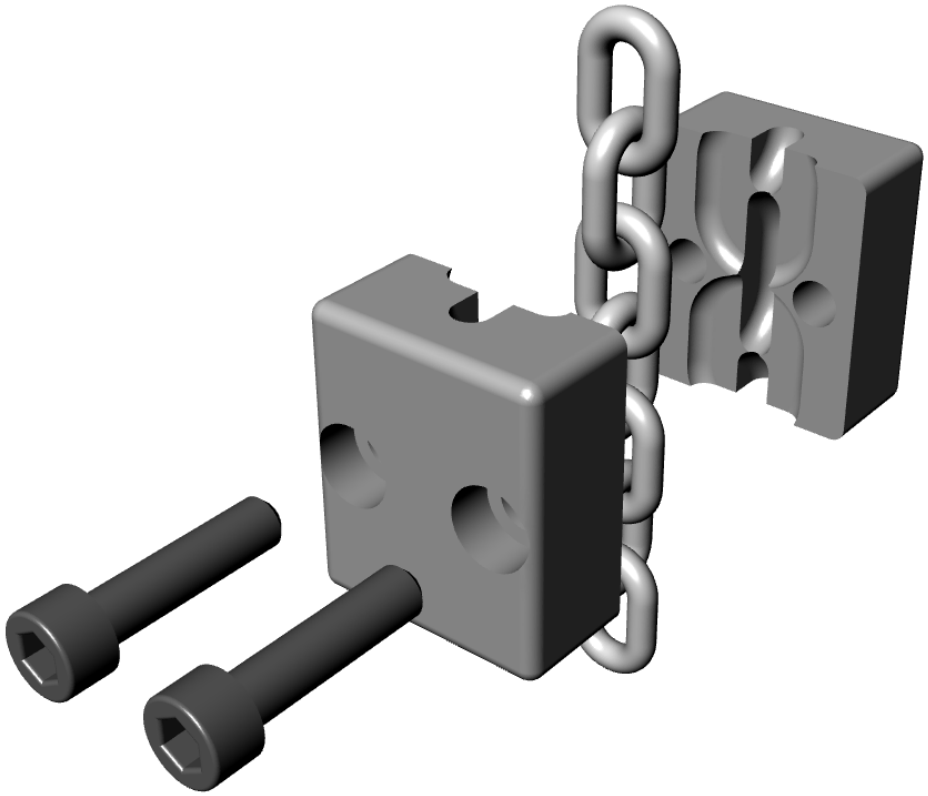
### 7.2.2 Main body




**Recommended parts for main body**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Bearing | Bearing 61817 |
| 2 | Bearing | Bearing 16004 |
| 3 | Oil seal | Oil seal 12-28-5 |
| 4 | Lift wheel | RWL 320-0022 |
| 5 | Bearing | Bearing 16006 |
| 6 | Bearing | Bearing 6001 |
| 7 | Oil seal | Oil seal 90-110-12 |
| 8 | Main body from reduction unit side | RWL 320-0004 |
| 9 | Chain guide | RWL 320-0009 |
| 10 | Guide plate | RWL 320-0008 |
| 11 | Chain bag bracket | RWL 320-0027 |
| 12 | Main body from motor side | RWL 320-0003 |

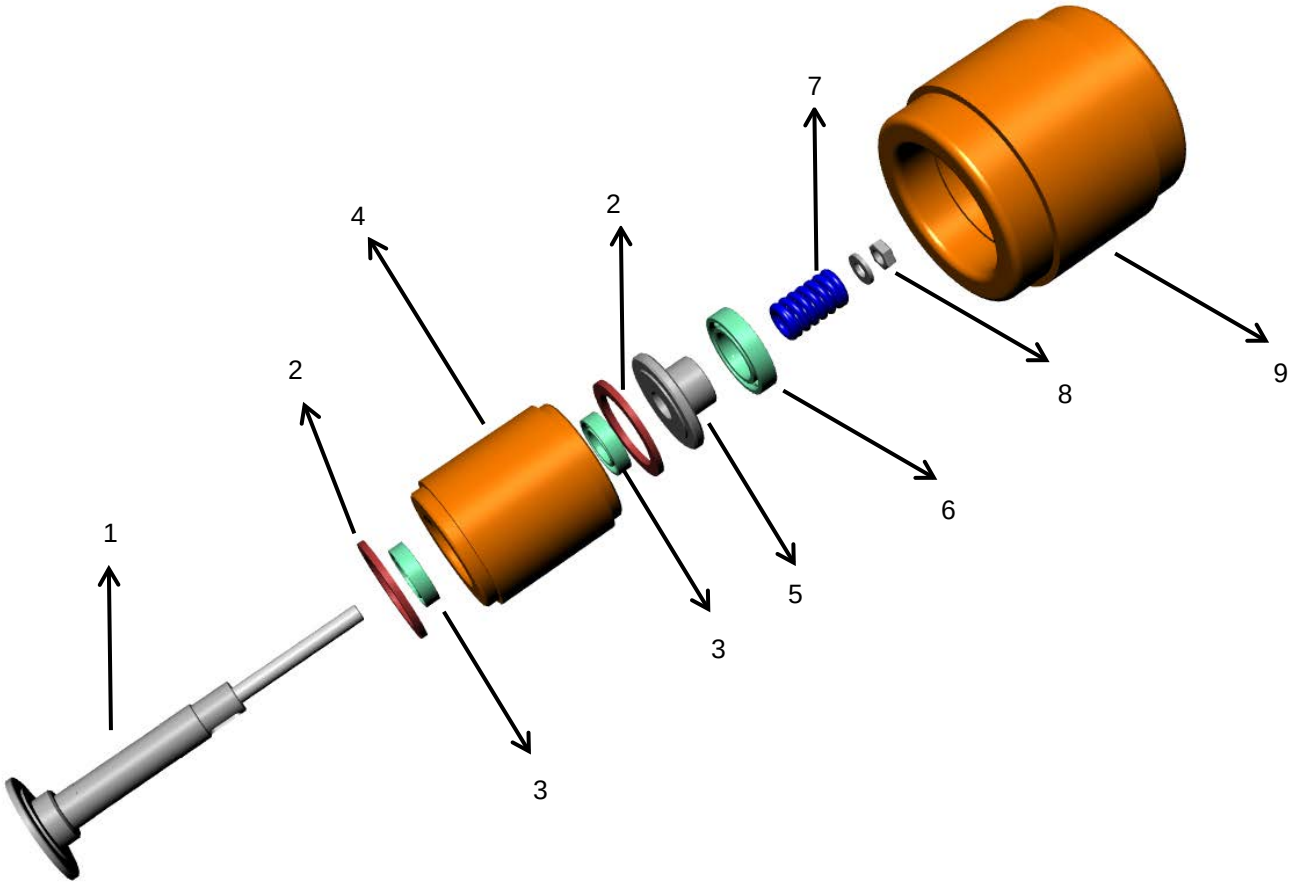
### 7.2.3 Chain fastener



**Recommended parts for chain fastener**

| Description | Part no. |
|---|---|
| Chain fastener for D8 320kg & D8+ 160kg | Chain fastener EXE-Rise 4x12 |

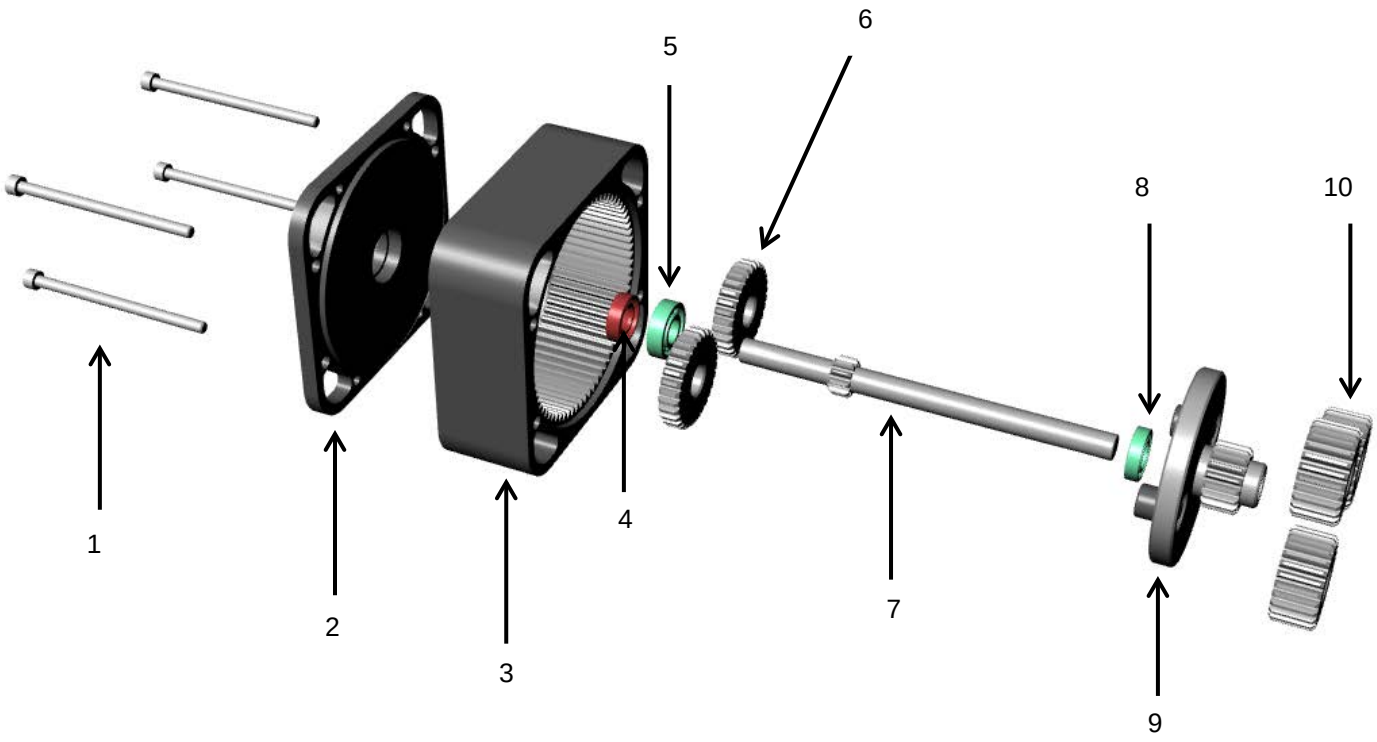
### 7.2.4 Clutch




**Recommended parts for clutch**

| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Motor shaft | RWL 320-0010 |
| 2 | Bakelite | RWL 320-0012 |
| 3 | Bearing | Bearing 61903 |
| 4 | Rotor | Rotor 66-60 |
| 5 | Pressure spring | RWL 320-0011 |
| 6 | Bearing | Bearing 61905 |
| 7 | Blue Spring | Blue spring 20x30 |
| 8 | Self-blocking D8 nut | M8 nut |
| 9 | Stator | Stator 110-60-66 4P. |

### 7.2.5 Reduction Gear

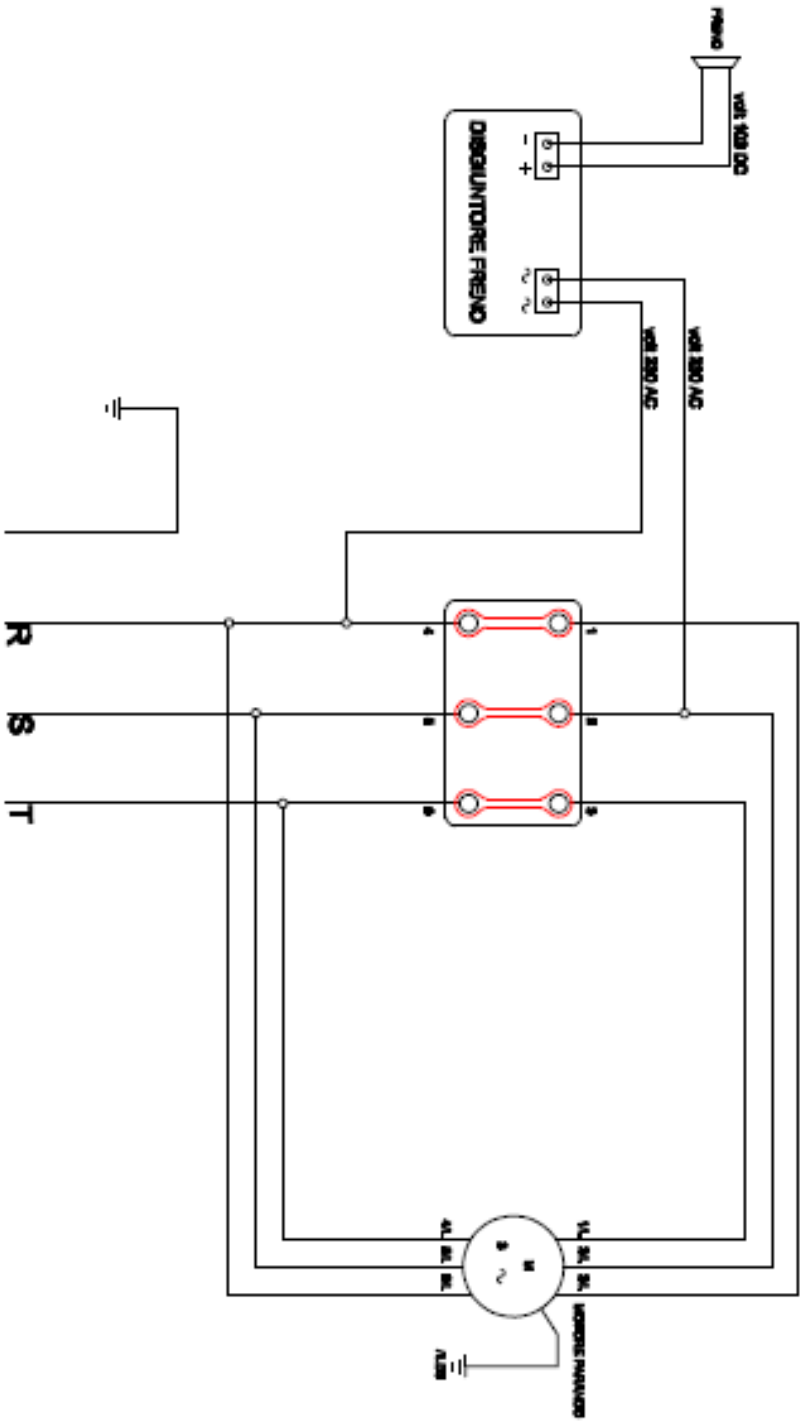



**Recommended parts for Reduction gear**

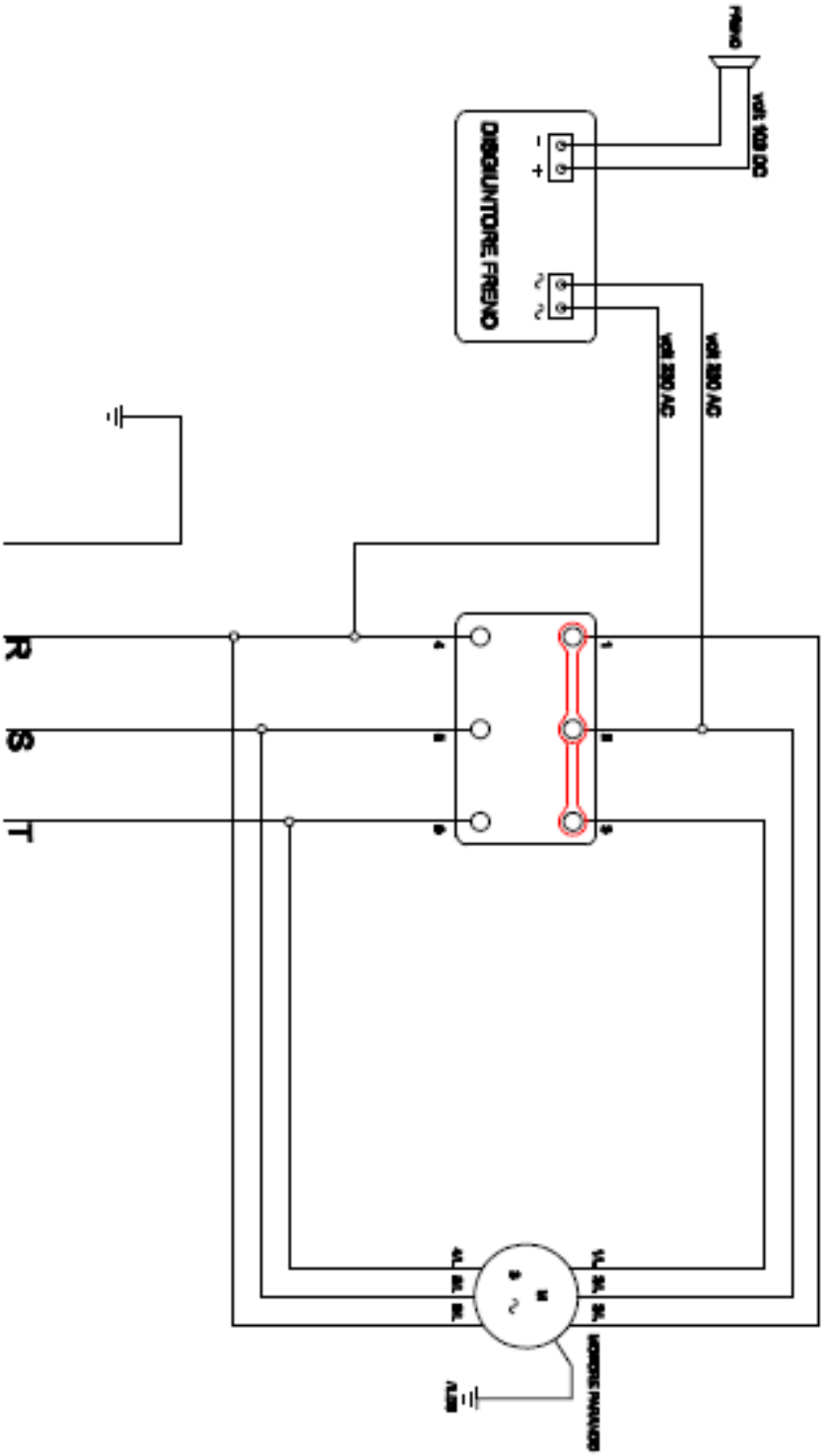
| Ref. no. | Description | Part no. |
|---|---|---|
| 1 | Screws | Screw-Tcei 6x100 |
| 2 | Reduction flange | RWL 320-0006 |
| 3 | Main body from reduction unit side | RWL 320-0005 |
| 4 | Oil seal | Oil seal 12-24-7 |
| 5 | Bearing | Bearing 6001 |
| 6 | Primary pinion | RWL 320-0018 |
| 7 | Gear shaft | RWL 320-0019 |
| 8 | Bearing | Bearing 61901 |
| 9 | Toothed flange | RWL 320-0017 |
| 10 | Secondary pinion | RWL 320-0015 |

## 7.3 Wiring Diagrams

### 7.3.1 Wiring Diagram For Direct Control Chain Hoists V 230 Hz 50/60



### 7.3.2 Wiring Diagram For Direct Control Chain Hoists V 400 Hz 50/60



# 8 DEMOLITION AND DISPOSAL

Before carrying out demolition and disposal of the hoist, complete the working cycle and disconnect power.

Upon demolition, plastic parts must be separated from electric components and must be sent to selective collections according to regulations in force.
With regard to metal housing, for a correct forwarding to melting recycling, its splitting in aluminium parts and parts in other metals or alloys is sufficient.

To dispose hydraulic oil, refer to what indicated in the product safety report.
It is prohibited to pour rejected liquids such as oils, circuit liquids, etc. on the ground or into draining piping. Dispose health and environment hazardous components or fluids in compliance with regulations in force on the matter.

During operations of hydraulic oil replacement and disposal, the operator must wear gloves and protective overalls indicated in the product safety report.

# 9 WARRANTY LIMITATIONS, REMEDIES AND DAMAGES

This expressed warranty is in lieu of all other warranties, expressed or implied, of marketing, fitness for a particular purpose, or in any other manner, no promise or assertion of fact declared by any vendor's agent or representative shall constitute a vendor's warranty or shall determine any liability or obligation.

The vendor guarantees that at the delivery date to the forwarding agent the goods are free from defects in workmanship and materials. The sole obligation of possible breach of the warranty or contract for negligence or in any other manner concerning the goods sold, shall be exclusively limited to repair or replacement, f.o.b. vendor's shipping point of any part that the vendor determines to be faulty, or, should the vendor determine that such repair or replacement cannot be undertaken, to a reimbursement of the purchase price upon return of the goods to the vendor.

Any action against the vendor for breach of contract, negligence or others must be initiated within one year from the occurrence of such trial action.
No claim for damages to the vendor for any defects of the goods shall be deemed valid or applicable without the written notification of the purchaser if it is not received by the vendor within one year from the shipping date.

The vendor is not liable for any damage, injury or loss due to improper use of the goods if, before such damage, injury or loss, such goods are (1) damaged or used in an improper manner following the delivery of the vendor to the forwarding agent (2), not serviced, inspected or used in compliance with the applicable laws and vendor's written instructions and advices; or (3) installed, repaired, tampered or modified without compliance with such law, instructions or advices. Under no circumstance the vendor shall be liable for accidental or consequential damages since these terms are defined in section 2-715 of the uniform commercial code.

## 9.1 Compensation and use under safety

The purchaser must follow and request his labour force to follow the provisions indicated in the instructions and manuals supplied by the vendor, and must use them and request his labour force to follow such instructions and manuals and take suitable care in the maintenance of such products. The purchaser must not remove, or allow anyone to remove, any warning plates or instructions on the product. In the event of

personal injury or damages to property or the Company resulting from the use of the product, the Purchaser must give a written notification of such injury or damage to the vendor within 48 hours.

The Purchaser must cooperate with the Vendor in the inquiries on such injury or damage and in defence of any claim for damages.
If the Purchaser fails to follow this section or if the injuries or damages are caused, totally or partially, by the Purchaser‘s non-observance of the federal or state laws on safety, the Purchaser must indemnify and keep harmless the Vendor from any claim, loss or expense for injuries or damages connected to the use of the product.

## 10 MAINTENANCE REGISTER

| Date | Activity | Result | Signature | Notes |
|---|---|---|---|---|

## MAINTENANCE

| Date | Activity | Result | Signature | Notes |
|---|---|---|---|---|

## MAINTENANCE

| Date | Activity | Result | Signature | Notes |
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